

## EFFECTS OF PROBODY MASSAGE ON PHYSICAL CHARACTERISTICS, BODY ALIGNMENT IN THE MIDDLE-AGED WOMEN WITH MUSCULOSKELETAL DISEASES

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The purpose of this study was to investigate the degree of improvement of physical characteristics, body alignment of the exercise group after Probody Massage Program of 8 weeks with 30 musculoskeletal diseases in middle-aged Women in B Metropolitan city. The subjects of this study were 30 musculoskeletal diseases in middle-aged in B Metropolitan city for 8 weeks twice a week, was carried out the Probody Massage Program of 60 minutes. Physiological characteristics are height, weight, BMI, an index of inflammation, body alignment was measured pretest, after 8 weeks. As the Probody Massage Program was showed a positive change in physical characteristics, body alignment with musculoskeletal diseases in middle-aged Women. Consequently it was suggested that Probody Massage with improvement and prevention for posture's unbalance of musculoskeletal diseases in middle-aged Women. This program could be utilized for improvement of youth postures and physical characteristics, body alignment of musculoskeletal diseases in middle-aged Women.

**KEY WORDS** : Probody Massage, musculoskeletal diseases, middle-aged women, physical characteristics, body alignment

**INTRODUCTION** : Middle-aged women often experience physical changes and deterioration as their body fat increasing while muscle mass decreasing due to lack in physical mobility and exercises(Baek, Yoon, Shin, Kim & Jeong, 2009). Also, the advancement of technology decreased women's household chores and it resulted in higher women obesity rate caused by more body fat content and increased prevalence rate owing to weakened musculoskeletal system (Park, 2015). Especially, musculoskeletal diseases caused by cumulative damages in muscular tissues owing to repetitive motions and household chores badly affect body parts such as neck, shoulders, arms, ankles, waist, hip joints, and etc. as those diseases can highly occur from over-enlarging of muscles and restricting ROM(range of motions) (Kim, 2007).

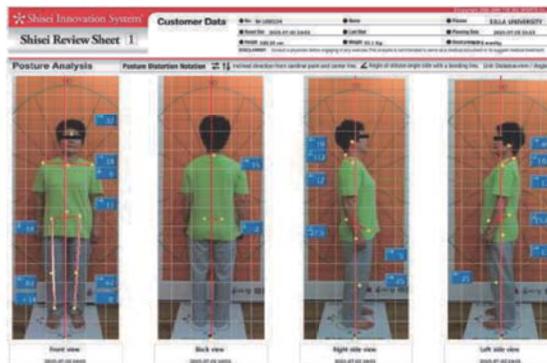
The Probody Massage has been developed based on clinical case studies conducted on 10,000 people for six years from 2009 to 2014, March, in order to increase in synthetic effect of joints, skeletons, and muscles and to keep up the right body shape by aligning skeletal and spinal systems (Kim, 2015).

Therefore, this study is aimed to find out a beneficial physical exercise program such as pro-body massage for the middle-aged women living in B metropolitan city and suffering from musculoskeletal disease as it will help them live a healthier and quality life correcting and aligning their body posture. Also, this study will prove the pro-body massage is a solution for those who are with musculoskeletal diseases to have other than operations and be used as basic line data for the effect of it.

**METHOD** : In this study, 30 middle-aged women with musculoskeletal diseases at the age between 40~64 residing in Busan metropolitan city were surveyed. These subjects who had never experienced pro-body massage program before and their VAS(Visual Analogue Scale) was above 5, fully comprehended and joined this program by filling in prior consent. In measuring the height and weight, automatic scales(DS-103, Dong- sahn Jenix, Seoul, Korea) were used while body mass index(BMI) was calculated according to the given formula and as for the body alignment, whole body posture analysis system(Shisei Innovation System PA200, Japan) was used. These measuring devices may analyze non-alignment of body and the gradient angle of neck-pelvis, the difference in height of the shoulder-pelvis, asymmetry rate, and rotation of upper and lower limbs <Figure 1>.

**Table 1. Probody Massage program**

Subject Position	Massage Contents	Massage Frequency	Massage Strength	Time
Supine Position	cervical portion massage	3point, 3times, 1set/2set	1~4weeks Pain Stimulation Strength 1~7 (weak~middle)	60min
	laryngeal muscle massage	2point, 3times, 1set/2set		
	trapezius muscle massage	3point, 3times, 1set		
	hip joint massage	3point, 3times, 1set		
	quadriceps muscle of thigh	4point, 3times, 1set		
	knee joint massage	3point, 3times, 1set		
Prone Position	front crural muscle massage	3point, 3times, 1set	5~8weeks Pain Stimulation Strength 7~9 (middle~strong)	60min
	back massage	3point, 3times, 1set		
	scapula massage	3point, 3times, 1set		
	hip massage	3point, 3times, 1set		
	biceps muscle of thigh	3point, 3times, 1set		
	back crural muscle massage	3point, 3times, 1set		
Supine Position	ankle massage	3point, 3times, 1set	5~8weeks Pain Stimulation Strength 7~9 (middle~strong)	60min
	chest massage	1point, 3times, 1set		
	cervical portion massage	1point, 3times, 1set/2set		
	laryngeal muscle massage	3point, 3times, 1set/2set		
Sitting Position	arms massage	2point, 3times, 1set	5~8weeks Pain Stimulation Strength 7~9 (middle~strong)	60min
	spine muscle	3point, 3times, 1set/2set		
	shoulder joint massage	3point, 3times, 1set/2set		
Sitting Position	trapezius muscle massage	1point, 3times, 1set	5~8weeks Pain Stimulation Strength 7~9 (middle~strong)	60min



**Figure 1. Body Posture measurement of the Subject**

This Probody Massage is a type of re-medical exercise applied from the upright body exercise program(Kim, 2015), which proved effective on correcting spinal curvature and body alignment. As shown by <Table 1>, this program was conducted 60 minutes at a time and twice a week for 8 weeks. Also, all the data collected for the analysis of general characteristics of the subjects were processed by Windows SPSS 23.0 Version to produce average values and standard deviation while the effectiveness before and after the program was statistically processed by matching sample paired t-test with the significant level,  $\alpha=.05$ .

**RESULTS:** The differences of the height, weight, and BMI of the subjects before and after the program are as shown in <Table 1>. After participating in the pro-body massage program, heights of them increased in statistically significant level while the weight and BMI decreased.

The effect of the pro-body massage was tested on different body part as forehead, shoulders, abdomen, pelvis, knee A by dividing the knee B and the differences in body alignment between before and after the participation are as shown in <Table 2>.

After participating in the program, the forehead incline of the subjects decreased in

statistically meaningful level as almost up to symmetry. Differences in right and left shoulder height decreased in statistically meaningful level while the navel turned to move more closer to the middle. Also, differences in pelvic height decreased in statistically meaningful level and differences in knee A of both right and left side didn't appeared statistically meaningful while differences in knee B of both right and left side appeared statistically meaningful.

**Table 2.** Changes of the physical characteristics (unit: %)

Subject	Pre (M±SD)	Post (M±SD)	t	df	p
Height(cm)	156.6±5.5	157.4±5.6	-15.673	29	.000***
Weight(kg)	58.6±9.7	57.5±9.5	12.814	29	.000***
BMI(kg/m <sup>2</sup> )	23.7±3.7	23.2±3.6	17.207	29	.000***

\*\*\*p<.001

**Table 3.** Change of body alignment (unit; mm)

Subject	Pre (M±SD)	Post (M±SD)	t	df	p
Forehead (away from center)	17.27±17.54	1.77±10.70	4.668	29	.000***
Shoulder Height	9.27±6.57	2.60±2.87	7.275	29	.000***
Center of Navel (away from center)	13.27±8.38	7.20±5.59	3.820	29	.001**
Pelvis Height	5.93±7.04	1.97±2.20	2.886	29	.007**
Right Knee A (away from center)	84.87±21.63	82.47±23.77	521	29	.606
Left Knee A (away from center)	95.50±23.77	94.97±14.19	.095	29	.925
Right Knee B (radius of curvature)	9.93±7.36	13.40±8.23	-2.486	29	.019*
Left Knee B (radius of curvature)	7.97±5.29	13.23±8.90	-3.568	29	.001**

\*\*\*p<.001

**DISCUSSION:** It is remarkable to see the height increase of 0.74 cm from the middle-aged women, which indicates the pro-body massage helps correct spines and postural non-alignment. Also, it is regarded that spinal correction of the subjects improved abnormal muscular tension which led to the increase in their mobility of the daily life.

BMI findings of this study appear similar with the previous study on massages and physical characteristics. Kim(2007) reports that applying arm procedure meridians on 20 middle-aged woman showed significant changes in their weight, body fat content, body water content, body fat rate, obesity, BMI, waist line and etc. Han & Jeong(2010) reports applying 8-week tuner massage on the 20 middle-aged women resulted in significant decrease in their weight, waist line, and BMI. Jeong & Pyo(2006) also say applying 8-week arm procedure meridians on 4 overweight women with body fat content above 27% and 6 obese women resulted that 30% of them experienced the decrease in body fat content(3.33kg) while 0.81% saw their body fat rate reduced.

Kim(2015)'s study reports 8-week Probody Massage applied to the primary disability brain lesion positively affected their improvement in ROM of shoulders and spine and the body operating functions, and the program also proved effective to enlarging the upper limbs joints ROM in terms of their sitting and crawling while it activates their body flexibility and mobility by correcting the skeletal alignment, enlarging joint ROM, and relaxing muscular tension. Thus it is considered to be a very effective rehabilitation massage to stabilizing spinal and pelvic balance, activating blood circulation, and improving cardio-functions.

This finding appear similar with that of a previous study which applied 12-week identity meridian massage to middle-aged women in their 30s. who are bow-legged, and it resulted in knee distance closure of varus knee as well as in positive changes in height as the angle of the hip joint was supinated and it also had numerically positive changes in lower body shape and lower limbs alignment (Kim, 2010). Kim(2013), Son(2014) also explains that the upright body exercise program of body alignment conducted on a group of 2 people were very effective to helping scoliosis problems and postural imbalance of teenagers. As 12-week upright body exercise program was applied to 20 middle school girls who were diagnosed of scoliosis and whose Cob`s angle was above 10°, the degree of scoliosis and backache reduced in statistically significant level (Kim, 2013). To sum up all the findings of the previous studies and this study, it appears that the pro-body massage positively affects the alignment of the upper and lower body as well as the changes in forehead, upper limbs, pelvic, knees.

**CONCLUSION** : This pro-body massage program was conducted 60 minutes at a time, twice a week for 8 weeks(total 16 times) in order to identify how it affects the physical characteristics and body alignment of 30 middle-aged women with musculoskeletal diseases and resulted in the following conclusion.

It is analyzed that the pro-body massage makes positive improvement in physical characteristics of the middle-aged women with musculoskeletal diseases as well as changes in body alignment while it also proved effective in preventing or curing obesity of them. Not only that, it is suggested that this program helps their improvement in spinal and pelvic instability, which all assert that we can look forward to more effect of the program if applied to more and various aged groups.

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