A Clinical Study of Gyrotonic Expansion System Program for the Treatment of Scoliosis

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Ⅰ. Introduction

Scoliosis relates to a curved spine which is supposed to be straight when viewed from the front, giving rise to a deformed posture, growth disturbance and chronic lumbago and threatening life by pressing such surrounding organs as the heart, etc. Seok Se-il, et al.(1980) say that if scoliosis develops, secondary health problems take place, causing surgical treatment and that this is why a lot of attention is being paid to early detection and treatment. Lonstein et al.(1982) say that the early detection and treatment of scoliosis work in reducing its development or surgical treatment. The researcher examined a total of middle and high school students in Seoul, finding that students with more than 5° curve at a standing posture accounted for 246(boys;12, girls: 234) according to X-rays. Seok Se-il et al.(1980) found that the scoliosis frequency of the subjects stood at 4.68%(boys: 0.74%, girls: 6.43%. According to a report by the Education Office of Seoul(1999), the frequency of scoliosis accounted for 0.25% in 1993, 0.37% in 1994, 0.495 in 1996 and 0.63% in 1998, showing a continuous increase.

According to the School Health Center, scoliosis is on the increase and the disease of girls turned out to be four times more than that of boys(Mun Jae-ho, et al. 1988). The muscular-skeleton system of juvenile students makes rapid progress and their scoliosis has much to do with their life habits including lack of exercise and learning environment.

Gunnoe(1990) says that an adolescent period is the time when grow and development are accelerated and that scoliosis can occur in the rapid developmental process(Kwon Hyeok-sang,1999).

As much emphasis is placed on the early detection of scoliosis and its early treatment, the treatment of scoliosis is carried out in a variety of fashions. In Korea, stretching exercise, sports massage, exercise therapy and massage, exercise therapy and physical correction therapy have been emphasized by Lee Kang-yun(2000),

Kwon Hyung-su(1998), Lee Suk-hee, et al.(1999), Kwon Hyuk-sang(1999) and Park Sung-su(2000), respectively. These researches have it that scoliosis can be prevented and corrected with the aid of muscular strengthening and pelvic-muscle strengthening exercise, demonstrating that scoliosis correction exercise programs have a positive effect. The programs come from a unique combination of Yoga, dance gymnastics and swimming and so on aided by distinctive instrument and exercise, strengthening physical strength and flexibility. Gyrotonic Expansion System capable of developing muscles, ligaments and joints has attracted a lot of attention in Europe and America in that it has proved to be more effective than other physical therapies in terms of ergonomics. This exercise is designed to improve muscular strength, flexibility and coordination by increasing the rhythm and movement of the whole body through three-dimensional circular motions starting from the spine and breath. This system proves to work like a charm not only for people, young and old, to professional athletes including dancers. In this context, this study is aimed at presenting clinically effective cases by working with those who suffer from scoliosis with the help of Gyrotonic Expansion System and to recommend the system as a rehabilitative exercise program.

Ⅱ. Research Method

1. Subjects

The subjects were composed of five female patients who had been diagnosed as scoliosis and going through Gyrotonic Expansion System for the correction of their posture.

Table 1 shows the features of the subjects.

Subjects	Sex	Age	primary curve cobb angle (T6～T12)	secondary curve cobb angle (T12～L4)
A	F	29	15	22
B	F	12	10	8
C	F	16	28	21
D	F	17	17	17
E	F	21	9	20

2. The Method of Implementing the Gyrotonic Expansion System

1) The Procedure of Gyrotonic Expansion System Exercise

First, the subjects were supposed to do some warming-up for five minutes with a Pole Exercise. Then, they were supposed to take exercise according to the Gyrotonic Expansion System for forty minutes. Last, they were supposed to finish their exercise through Medx-used stretching and Tradmill walking for fifteen minutes. The total amount of time spent in this system came to 60 minutes.

2) Pole exercise used Warming Up

The subjects took part in Pole exercise warming up in accordance with their physical features and their ability to exercise so that the program may be carried out for the safety of the subjects(Figure 1).

Figure 1. Pole Exercise for Warm-up

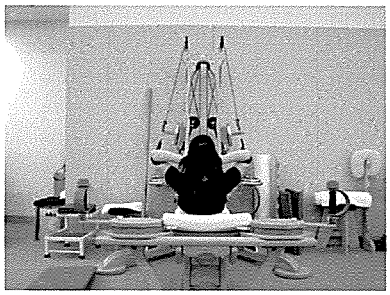
3) The Main Exercise of Gyrotonic Expansion System

The Gyrotonic Expansion System consists of eight programs such as Arch & Curl Series, Hamstring Series, Upper Body Series, Leg Work Series, Abdominal Series, Upper Body Opening, Patella/Quadriceps, and Cervical Series. The researcher kept in mind the status of scoliosis to adjust the part of the body to strengthen, intensifying the exercise of the subjects and controlling the frequency and the intensity of exercise for the sake of securing the safety of the subjects. <Table 2> and <Figure 2, 3> shows the contens of Gyrotonic Expansion System Program for the Treatment of Scoliosis.

Table 2. Program of Gyrotonic Expansion System

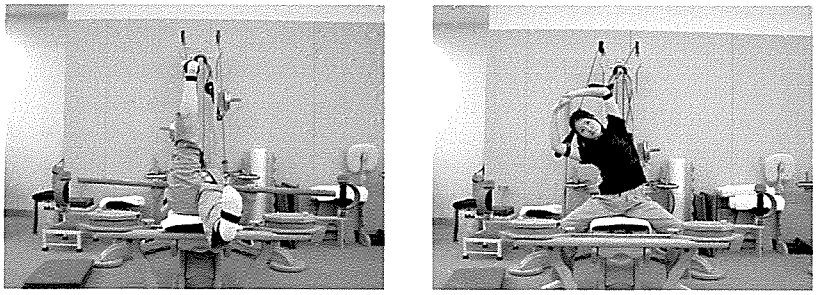
Contents	Program	Times
Pole Exercise (weight: 5~10kg)	Rocking	8
	Side shift	8
	Side Bending	8
	Small Swimming	16
	Wave	4
Handle Exercise	Arch & Curl	8
	String	8
	Cross Grip Stretch	4
	Arch & Curl	8
Hamstring Series (weight: 12~15kg)	Both leg Stretch	20
	Bicycle	30
	Scissors	10
	Full Circle	10
Abdominal series (weight: 10~15kg)	Rolling up & Down	4
Shoulder Exercise (weight: 5~10kg)	Shoulder Mobilazation	8
	Side Bending	8

Handle Exercise



Abdominal Series

Figure 2. Gyrotonic Expansion System Program

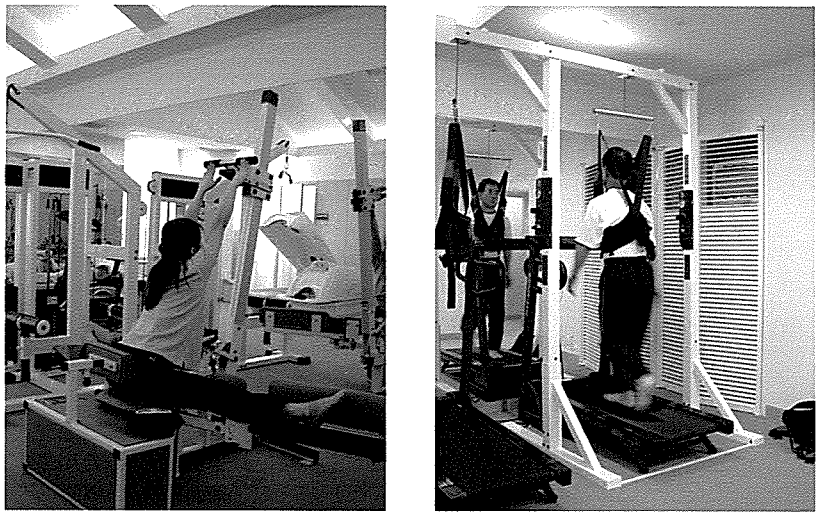


Hamstring Series Shoulder Exercise

Figure 3. Gyrotonic Expansion System Program

4) Medx-used Stretching and Tradmill Walking Exercise

The subjects did cool-down exercise through Medx-used stretching exercise and Tradmill walking exercise(Figure 4) with a view to inducing the stability of their postures based on skeleton muscle correction and strengthening after the implementation of the exercise program.



Medx-used stretching exercise Tradmill walking exercise

<Figure 4> The Picture of cool-down Exercise

3. Analysis of Data

In order to examine the clinical betterment of the subjects' scoliosis through the Gyrotonic Expansion System, the researcher relied on the front and rear X-ray recording of the standing subjects, making a comparative of the previous and post results of primary curve, (T6-T12) and secondary curve (T12-L4) of each subject with the help of Cobb.

Ⅲ. Results

<Table 2> shows the previous and post results of primary curve(T6-T12) and secondary curve(T12-L4) of the five subjects who went through the correction of the postures on the basis of the Gyrotonic Expansion System with the help of Cobb.

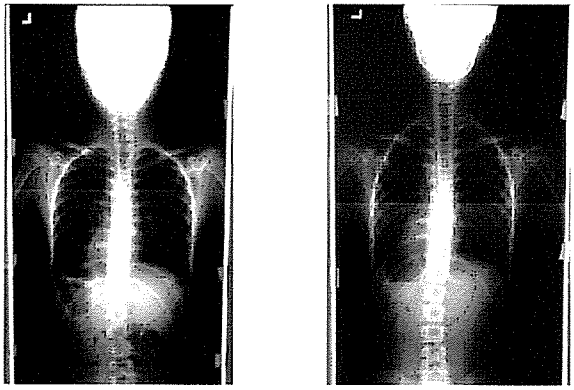
Table 2. Changes in the Subjects' Scoliosis

Subject	Sex	Age	Period	T.E.	Primary Curve cobb Angle		Secondary Curve cobb Angle	
					Pre	Post	pre	Post
A	F	29	2002.7-2002.10	24	15	12	22	22
B	F	12	2002.8-2002.11	24	10	1	8	5
C	F	16	2003.1-2003.4	24	28	28	21	14
D	F	17	2002.11-2002.12	24	17	17	17	15
E	F	21	2002.6-2003.2	43	9	5	20	22

Note: F; Female, T.E.: Times of Exercise

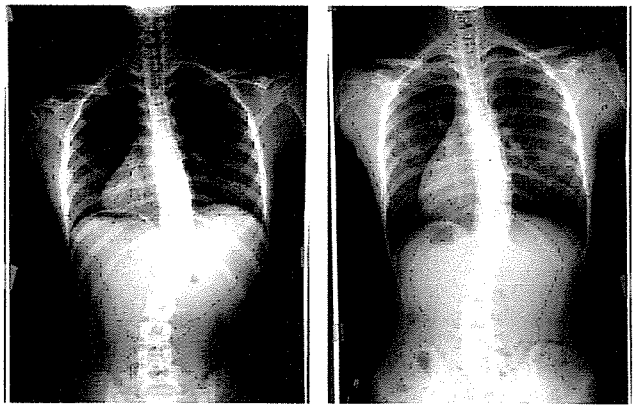
As <Table 2> shows, the primary curve cobb angle of subject A, or the thoracic vertebrae turned out to be improved and her scoliosis inclined at a more than 5 degree within 6 months, which implies that the results proved to be effective for her scoliosis didn't get worse. In case of subject B, the primary cobb angle(T6-T12) and the secondary cobb angle(T12-L4) turned out to be improved. This implies that the former was better improved than the latter(Figure 5).

In case of subject C, her primary curve cobb angle(T6-T12) and her secondary curve angle(T12-L4) turned out to be improved. The survey shows that the latter was better than the former(Figure 6). In case of subject D, her primary curve cobb angle(T6-T12) didn't get better but her secondary curve cobb angle (T12-L4) got better. In case of subject E, her primary curve cobb angle(T6-T12) turned out to be improved, but her secondary curve cobb angle(T12-L4) turned out to be worse. As the table shows, this subject failed to be treated over a long period of time and to have an effect of stable improvement.



Before After

Figure 5. The pre and post X-ray pictures of subject B



Before After

Figure 6. The pre and post X-ray pictures of subject C

Ⅳ. **Discusion**

As much emphasis is placed on the early detection of scoliosis and its early treatment, the treatment of scoliosis is carried out in a variety of fashions. In Korea, stretching exercise, sports massage, exercise therapy and massage, exercise therapy and physical correction therapy have been emphasized by Lee Kang-yun(2000), Kwon Hyung-su(1998), Lee Suk-hee, et al.(1999), Kwon Hyuk-sang(1999) and Park Sung-su(2000), respectively. The programs come from a unique combination of Yoga, dance gymnastics and swimming and so on aided by distinctive instrument and exercise, strengthening physical strength and flexibility. Gyrotonic Expansion System capable of developing muscles, ligaments and joints has proved to be more effective than other physical therapies in terms of ergonomics. This system proves to work like a charm not only for people, young and old, to professional athletes including dancers. In this context, this program is capable of strengthening their muscles and muscular skeletons. This study shows that the subjects' scoliosis was improved with the help of Gyrotonic Expansion System. The survey on the results of the Gyrotonic Expansion System reveals that the primary curve cobb angle(T6-T12) was better than the secondary curve cobb angle(T12-L4). It is necessary that future studies should be made in relation to standardization of the Gyrotonic Expansion System.

Ⅴ. **Conclusions**

This study is aimed at presenting clinically effective cases by working with those who suffer from scoliosis with the help of Gyrotonic Expansion System that is evaluated as ergonomically better than other physical therapies and to recommend the system as a rehabilitative exercise program. With this in mind, the researcher worked with five subjects who had visited hospital W and had been diagnosed as scoliosis, conducting the primary curve cobb(T6-T12) and secondary curve cobb(T12-L4) before and after being exposed to the posture corrections of the Gyrotonic Expansion System. The survey reveals that the Gyrotonic Expansion System was effective in improving the subjects' scoliosis. Gyrotonic Expansion System, showing that the primary curve cobb angle(T6-T12) was more improved than the secondary curve cobb angle(T12-L4). The researcher thinks that future research should focus on the standardization of the Gyrotonic Expansion System on a continuous basis.

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ABSTRACT

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As much emphasis is placed on the early detection of scoliosis and its early treatment, the treatment of scoliosis is carried out in variety of fashions. Gyrotonic Expansion System capable of developing muscles, ligaments and joints has proved to be more effective than other physical therapies in terms of ergonomics. This system proves to work like a charm not only for people, young and old, to professional athletes including dancers. In this context, this program is capable of strengthening their muscles and muscular skeletons. This study is aimed at presenting clinically effective cases by working with those who suffer from scoliosis with the help of Gyrotonic Expansion System that is evaluated as ergonomically better than other physical therapies and to recommend the system as a rehabilitative exercise program. With this in mind, the researcher worked with five subjects who had visited hospital W and had been diagnosed as scoliosis, conducting the primary curve cobb(T6-T12) and secondary curve cobb(T12-L4) before and after being exposed to the posture corrections of the Gyrotonic Expansion System. The survey reveals that the Gyrotonic Expansion System was effective in improving the subjects' scoliosis. Gyrotonic Expansion System, showing that the primary curve cobb angle(T6-T12) was more improved than the secondary curve cobb angle(T12-L4). The researcher thinks that future research should focus on the standardization of the Gyrotonic Expansion System on a continuous basis.