

# **Influence of music therapy using One to Five piano technique to improve the concentration of children with autism**

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## **Abstract**

This research aimed to evaluate the influence of music therapy to improve the concentration of children with autism using the One to Five piano technique, which has been developed by Threerat Ouphatumphoteewan (2551). The target group included eight students with autism in Research and Development Center of Autistic Inclusive Education at Demonstration School of Khon Kaen University. The experiment was conducted during the first semester of the Academic Year, 2012, in between July 3<sup>rd</sup> to August 4<sup>th</sup>, 2012. The research tool consisted of (1) Twelve plans of the One to Five piano technique, (2) the evaluation score form/the concentration report, consisting of 2 sections: the basic information of students with autism, and the evaluation score form/the concentration report of pre- and post-participation of 12 plans of the One to Five piano technique, and (3) The evaluation form of the observational behavior of autistic students. The data of the present study were analyzed using the fundamental statistics to present results as means that were illustrated as tables and figures of individual student.

## **Summary**

1) The results of music therapy using 12 plans of One to Five piano technique (time duration = 50 minutes a plan), the behavioral evaluation scores of eight autistic students concerning the concentration before (the 1<sup>st</sup> participation) and after participated (the 12<sup>nd</sup> participation) 12 plans of One to Five piano technique were unequal depending on potentials of each student. The average scores of pre-participation and post-participation were 28.25 and 43.87, respectively.

2) The evaluation scores of improved behaviors of eight autistic students concerning the concentration after participated (the 12<sup>nd</sup> participation) 12 plans of One to Five piano technique increased; however, the evaluation score of each student were different. The average scores of improved behaviors of eight autistic students concerning the concentration after participated 12 plans of the One to Five piano technique were +15.62.

**Keywords:** Autistic, Music therapy, Special education

## Background and rationale of research

In the present, the prevalence of Autistic Spectrum Disorders (ASD) in a global population has rapidly increased. According to previously national reports, it has found an abundance of newborn babies with autism that was considered as 10% of a child population. Further, the number of autistic children is likely to increase continuously; for example, an autistic child to a whole population rate ratio is regarded as 1:166 (Anon Bunyarudtanavech, 2549).

ASD is one of the disabilities associating with three types of development, in terms of social interaction, social communication and social imagination as well as obviously repeated behavior symptoms. This disorder is a neurodevelopment syndrome resulting in abnormally function of some portions in nervous system. The ASD usually appears in children under 3 years old; nonetheless, the ASD symptoms can be reduced by stimulating development of autistic children and providing the suitable learning to the autistic children. Consequently, their developments become enhanced and they will be able to happily live with other people. Unfortunately, children tend to have ASD resulting from a social problem in the present that parents work too hard for expensing their families to have time for looking after their children. Moreover, there is not only ASD found in children but also Attention Deficit Disorder (ADD), mental retardation and Amyotrophic Lateral Sclerosis (ALS) are extremely found in children caused by problems of each family. Therefore, these children are called "Children with Special Needs". In case of treatment, the ASD is incurableness that cannot be treated by a medication. There may have some side effects on certain organs of patients in case the medication is used. Hence, the "alternative medication" is referred to be used for dealing with the ASD by doctors and parents as this method has no a side effect or has the least effect on the autistic children.

Several methods of both conventional medication and alternative medication have been used to stimulate the neurodevelopment of children with autistic. The conventional medication is mostly chosen by rich parents because of high cost of pills so as to cure their children under doctor supervision. Conversely, the alternative medication is the other therapy method used to stimulate some parts of the nervous system in children with autism. These methods include hydrotherapy, hippo therapy and music therapy.

Music therapy is to use the music to improve and maintain the health, mentality, emotion and social interaction. The therapy musician as a conductor who carries out the musical activity which has an obvious structure, regulation, and scientific approach. The purpose of the music therapy does not emphasize to have an advanced music skill. The influence of music is linked to body changes in pulse rate, breathing rate, blood pressure, eye pupil response, blood circulation, perception, and muscle tension. Likewise, the music influences on changes in mentality and nervous system, namely emotion, consciousness, imagination and verbal communication. Piano is a musical instrument that is played with two hands and fingers pressing on a keyboard. The practice to play piano does not take time as long as practice to play other music instruments such as violin, cello and clarinet.

Piano can produce a wide pitch (88 keys) and also many levels of sound quality; for instance, symphonic music is composed using piano of which pitch is alternative to other instruments. Finally, piano is used for reading two different notes of sound keys (e.g. right-so key and left-so key). Playing piano is able to promote both of the left and right cerebral hemispheres at the same time leading to improve the skill via reading the music notes.

The music produced by pressing fingers on the keyboard of a piano can influence on body changes e.g. pulse rate, breathing rate, blood pressure, eye pupil response, blood circulation, perception, and muscle tension. Likewise, the music influences on changes in mentality and neural system, such as emotion, consciousness, imagination and verbal communication because the music activates an endocrine gland, in particular, to excrete the

endorphins relating to happiness. The different levels of sound lead to various emotions; for example; the low-media sound levels produced from the left of keyboard make people feel constant and conscious. The high sound level produced from the right of keyboard makes people feel cheerful. Likewise, the high sound level of music produced by Piano Forte also results in the muscle tension. The creativity of people can be made during listening the music melody and feeling can be made during listening to the chorus. According to the aforementioned explanation, it is thus called “music therapy with piano”.

“One to Five piano technique” is a technique of playing piano with five numbers that are converted from the common music scale, instead of playing with all common keys. Both of right- and left-cerebral hemispheres of players whos uses this technique can be stimulated. The finding of Sopun Pukhanroon (2555), psychiatric patients in Srithanya hospital treated using One to Five piano technique had the enhanced performance; furthermore, it worked as well and easy as used with children with special needs.

Due to an aforementioned advantages and importance of the music therapy, the author aimed to investigate the effects of One to Five piano technique on concentration improvement of children with autism, and also provided the piano therapy in the class of the autistic children. The knowledge of the present study would be used to enhance the performance of each autistic student and distributed among parents, teachers, administrators and multidisciplinary team.

## **Research purposes**

1. To study on the effects of music therapy using One to Five piano technique on the concentration of children with autism.
2. To improve the concentration of children with autism.

## **Scope and limitation of research**

The target group consisted of eight students with autism, belonging to Research and Development Center of Autistic Inclusive Education at Demonstration School of Khon Kaen University. The experiment was conducted twice a week during the first semester of the academic year, 2012. Each of eight autistic students was assigned with each of 12 plans of the One to Five piano technique twice a week for six weeks and time duration was 50 minutes a plan.

## **Materials and methods**

1) The experiment of this research and the research tools were designed and created, respectively, based on previous researches, published articles and the interview of expert committees concerning music therapy, special education and educational.

1.1) Twelve plans of the One to Five piano technique were created based on the evaluation score form/the concentration report, previous researches and published articles.

1.2) The evaluation score form/the concentration report were prepared that were divided into two sections:

Section 1: The basic information of the students with autism

Section 2: The evaluation score form/ the concentration report which were used for evaluating the student concentration before and after participating 12 plans of the One to Five piano technique.

1.3) The observational behavior form was used for reporting the behaviors of the students with autism.

2) The research tools (e.g. the evaluation form/ the concentration report) were revised to be improved and suggested by three committees of expert at music therapy, special education and educational program.

3) The research tools were edited and improved according to committee comments and suggestions.

4) The research tools were used with the target group.

5) The One to Five piano technique was employed in the experiment during the first semester of the Academic Year, 2012.

6) The data collection: the data obtained from the observational behavior form of autistic students that was reported while the students was being provided with 12 plans of One to Five piano technique.

## Results

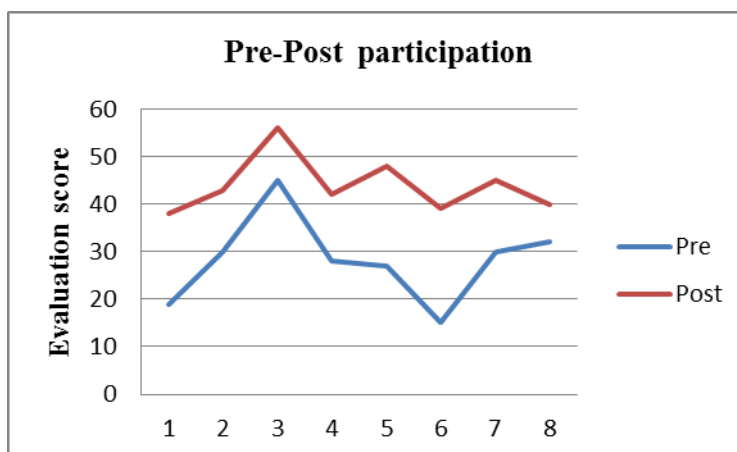
1) The results of using 12 plans of the One to Five piano technique (experimental duration was 100 minutes a plan).

2.1) The evaluation score of the observational behavior in students with autism before and after participating the plan of One to Five piano technique is presented in Table 1.

**Table 1** The evaluation score of the observational behavior in students with autism before and after participated the plans of One to Five piano technique

Sequence of individual Student	Evaluation score	
	Pre-participation	Post-participation
1	19	38
2	30	43
3	45	56
4	28	42
5	27	48
6	15	39
7	30	45
8	32	40
<b>Average</b>	28.25	43.87

According to Table 1, the behavioral evaluation scores of eight autistic students concerning the concentration before (the 1<sup>st</sup> participation) and after participated (the 12<sup>nd</sup> participation) the plan of the One to Five piano technique were unequal depending on potentials of each student. The average scores of pre-participation and post-participation were 28.25 and 43.87, respectively.



**Figure 1** The evaluation results of autistic student behavior before and after participated the plans of the One to Five piano technique

Based on Figure 1, the behavioral evaluation scores of eight autistic students concerning the concentration before (the 1<sup>st</sup> participation) and after participated (the 12<sup>nd</sup> participation) the plans of the One to Five piano technique were not equal depending on potentials of each student.

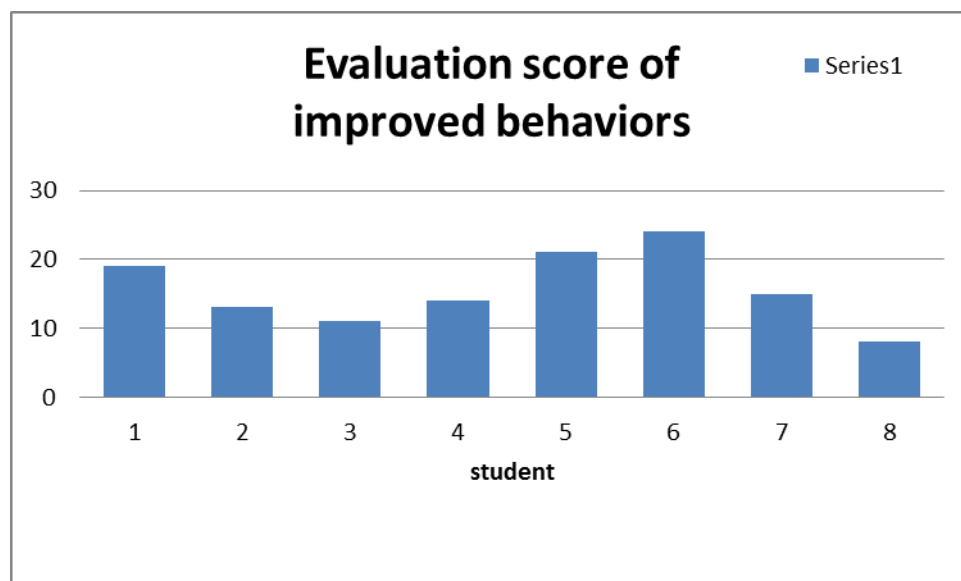
2.2) The evaluation scores of improved behaviors of eight autistic students concerning the concentration after participated (the 12<sup>nd</sup> participation) the plans of the One to Five piano technique are presented in Table 2.

**Table 2** The evaluation score of improved behaviors of eight autistic students concerning the concentration after participated the plans of the One to Five piano technique

Sequence of individual Student	Evaluation score of improved behaviors
1	+19
2	+13
3	+11
4	+14
5	+21
6	+24
7	+15
8	+8
<b>Average</b>	<b>+15.62</b>

According to Table 2, the evaluation scores of improved behaviors of eight autistic students concerning the concentration after participated (the 12<sup>nd</sup> participation) the plans of the One to Five piano technique increased; however, the evaluation scores of each student were not equal. The average scores of improved behaviors of eight autistic students concerning the concentration after participated the plans of the One to Five piano technique were +15.62.

**Figure 2** The evaluation score of improved behaviors of eight autistic students concerning the concentration after participated the plans of the One to Five piano technique



Based on Figure 2, the evaluation scores of improved behaviors of eight autistic students concerning the concentration after participated the plans of the One to Five piano technique were different.

## Discussion

1) The autistic symptoms of autistic people are different in each person with autism (Queen Sirikit National Institute of Child Health, 2546). The autistic symptoms are associated with social disability, communication disability and learning disability of the five senses (e.g. touch, taste, smell, sight and sound). Consequently, the behavioral evaluation scores of eight autistic students concerning the concentration before (the 1<sup>st</sup> participation) and after participated (the 12<sup>nd</sup> participation) the plan of the One to Five piano technique in the present study were unequal depending on potentials of each student (Table 1).

2) The One to Five piano technique as the music therapy can make people serene and focus on the rhythm of piano. The procedure of playing the One to Five piano technique is simple; the students press the sing number as a key note of piano to produce the sound of music. Music positively affects body changes e.g. pulse rate, breathing rate, blood pressure, eye pupil response, blood circulation, perception, and muscle tension. Likewise, the music influences on changes in mentality and neural system, such as emotion, consciousness, imagination and verbal communication because the music activates an endocrine gland, in particular, to excrete the endorphins relating to happiness. The different levels of sound produced by Piano Forte lead to various emotions; for example; the low-media sound levels produced from the left of keyboard make people feel constant and conscious. The high sound level produced from the right of keyboard makes people feel cheerful. Likewise, the high sound level of music also results in the muscle tension. The creativity of people can be made during listening the music melody and feeling can be made during listening to the chorus (2555, Panujaroen Somsakul). To improve a music skill, time duration for doing the music therapy should be two hours twice a week (Somjit Vonghom (2553) so as to increase a frequency of music practice and sound level perception. In the present study, each of the autistic children was encouraged to practice playing the One to Five piano technique continuously using a piano by a teacher every Tuesday and Thursday. The results of the present study indicated that the behavior scores of eight autistic students concerning the concentration after participated (the 12<sup>nd</sup> participation) 12 plans of One to Five piano

technique enhanced depending on the potential of each person. The autistic students were able to greater focus on the music therapy.

## Conclusion

1) The results of music therapy using 12 plans of One to Five piano technique (time duration = 50 minutes per a plan), the behavioral evaluation scores of eight autistic students concerning the concentration before (the 1<sup>st</sup> participation) and after participated (the 12<sup>nd</sup> participation) the 12-plan One to Five piano technique were unequal depending on potentials of each student. The average scores of pre-participation and post-participation were 28.25 and 43.87, respectively.

2) The evaluation scores of improved behaviors of eight autistic students concerning the concentration after participated (the 12<sup>nd</sup> participation) 12 plans of One to Five piano technique increased; however, the evaluation scores of each student were different. The average scores of improved behaviors of eight autistic students concerning the concentration after participated 12 plans of the One to Five piano techniques were +15.62.

## Suggestions and recommendations for further research

(1) The 88-key piano should be used in the experiment because it can produce higher quality of sound. The 88-key piano, which is a standard modern piano, needs a proper compression force of fingers and hands for pressing on the keyboard.

(2) The file of sign number as key note should be on a stand of the piano for students to look while they are playing the piano.

(3) The evaluation plan of student improvement should be conducted every hour in order to investigate the improvement of each student.

(4) The data collection should be planned to report during the student are participating the plans of One to Five piano technique.

(5) The analysis of effects of music therapy using the One to Five piano technique should be carried out by experts from several major fields.

(6) The One to Five piano technique should be developed to apply with local music instruments, such as Bonglarng and Ranard (Thai xylophone) as these music instruments are commonly found in local area and they are not expensive.

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