

Relaxation Effects of Snoezelen for Infants with Severe Motor and Intellectual Disabilities

— Used SpO₂ Values and Heart Rates as Indicators —

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Summary

A study was undertaken to measure SpO₂ values and heart rates of infants with severe motor and intellectual disabilities, in both Morning Meeting and Snoezelen Environments. The cases of three infants, who were attending the Infant Care and Treatment Center, were examined, by attaching pulse oximeters to the subjects and taking measurements, for a total of eight times over a period of ten months. The results of the research show that, compared to the Morning Meeting environment, in the Snoezelen Environment, the range of fluctuation for SpO₂ (Arterial blood oxygen saturation) values increased and three subjects had more stable breathing, and the range of fluctuation for heart-rates decreased. From these results, it was considered that, overall, for the three infants with severe motor and intellectual disabilities, a Snoezelen Environment provides psychological stability, and has the effect of facilitating relaxation. However it cannot receive environment of Snoezelen enough is supposed with under 3 years old. In other words it may be said that the development of some sensory organs are necessary to enjoy environment of Snoezelen. Based on leading research in various countries overseas, it has been suggested that Snoezelen has relaxation effects on infants with severe motor and intellectual disabilities, children with serious illnesses, children with intellectual disabilities, and on people with dementia. Furthermore, Snoezelen also has both care and treatment, as well as education aspects. It is possible to set up and assess objectives in actual medical care and treatment, and educational situation.

Key words : Snoezelen, Infants with severe motor and intellectual disabilities, Relaxation Effects

Introduction

The philosophy of Snoezelen is concerned with spending a happy time that is filled up with a variety of environmental stimulants which create a safe multiplex sense simulative environment where one can use sight stimulation and hearing stimulation, sense of smell stimulation to stimulate the human five senses comfortably and which promotes interesting activity and relaxation, both for a person with disabilities and mutually for persons without said disabilities (Anezaki, 2006 b).

Snoezelen was begun as a leisure (spare time) activity for seriously mentally-disabled persons. However, it turned into a realization that it could be used for both as therapy and as educational medium as indicated by research results. (Mertens, 2003; Anezaki, 2007)

Previous research reports that Snoezelen draws positive reactions (Anezaki, 2006 b) and promotes relaxation (Anezaki, 2006 a; 2006 b) for infants with severe motor and intellectual disabilities.

This previous research relied on observing behavior in Snoezelen settings (Anezaki, 2003), Video

analysis of behavior (Anezaki, 2006 b), and a questionnaire survey of users (mothers) after Snoezelen sessions (Anezaki, 2006 a), and none of these were truly scientific empirical research.

In several foreign countries, scientific research on the relaxation effect of Snoezelen is done using physiological indices. For example, it was reported that Snoezelen is effective in reducing both heart rates and blood pressure in seriously ill children, for a relaxing effect (White, 1997), and reduced heart rates and relaxed intellectually disabled children (Shapiro, 1997) and elderly people with dementia (Diepen et al, 2002; Bailon et al, 2004)

However, only very little occasional research has been seen on the relaxation effect of Snoezelen for infants with severe motor and intellectual disabilities, and it was rarely reported (Anezaki, 2004, 2006 c). The current situation is that empirical research has not been reported.

Therefore, this research aims to report on the relaxation effects of Snoezelen for infants with severe motor and intellectual disabilities. For an example, we used a pulse oximeter to measure SpO₂ and heart rates at Morning Meetings and in Snoezelen settings, for three infants with severe motor and intellectual disabilities attending at the Care and Treatment Center with their mothers.

Subject infants, and period and number of times receiving care and treatment

Infant A age 5 years, 7 months, classified as 5 in Ooshima's classification (classification of disabilities), and is able to roll over. Infant B age 4 years, 1 month, classified as 1 in Ooshima's classification, and cannot roll over. Infant C age 2 years, 6 months, classified as 1 in Ooshima's classification, and can roll over.

All three have CP (Cerebral Palsy) and MR (Mental retardation) and epilepsy, together. The care and treatment period was from April 2004 to January 2005. All three infants participated 8 times in total.

Infant A has received mother and infant care treatment of Snoezelen 15 times in total before this. And infant B has received 14 times, infant C has received 12 times, in total before this.

After participating in a “Morning Meeting” for 15 minutes, they participated in “Snoezelen mother / infant care and treatment” (with caregiver, subject infant, and mother) for 21 minutes.

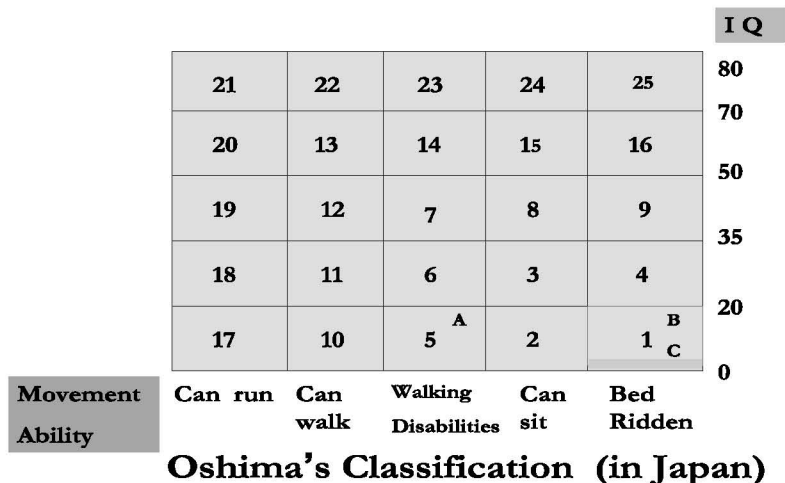


Fig.1

Morning Meeting

Two or three infant care givers care for five to seven infants with severe motor and intellectual disabilities (mainly ages 2 to 5 years old infant).

In the morning meeting, each mother assisted beside her infant. Three subject infants were helped to sit up before a table, and were seated in a stable posture, and participated.

At every Morning Meeting, “morning song”, “sticking an attendance seal”, and “play using hands” were done in this same order.

Environmental setting of Snoezelen

We used a blackout curtain to darken the room of about 11 square meters. One caregiver, did the sessions together with the mother and her infant with severe motor and intellectual disabilities. And mother did the sessions together. We used the following Snoezelen equipments to create a so-called “White Room”.

We prepared the following: mirror ball, bubble tube, fiber glow lamp, solar projector, aroma diffuser (sweet orange), beaded cushion, CD radio / cassette player, and Snoezelen music for children (Fig. 2). Three subject infants participated, all helped with stable posture.

Attaching and analysis of the pulse oximeter

The PULSOX-M 24 universal probe (UD-5 C) made by Teijin in Japan was attached to infant A on the right big toe, by infant B on the left thumb, and by infant C on the left big toe, wrapped on with medical tape, with the main unit on A’s right foot, B’s left hand, and C’s left foot.

No particular displeasure was observed in the three subject infants while wearing the probes and main units. We used Teijin DS-M analysis software to analyze the data (Fig. 3).



Fig. 2 Snoezelen Environmen

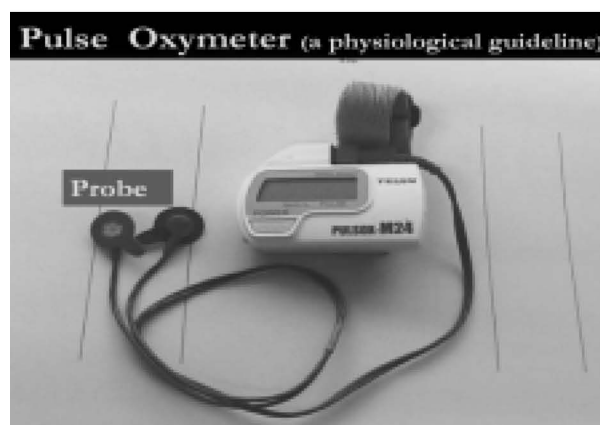


Fig. 3 Pulse Oximeter

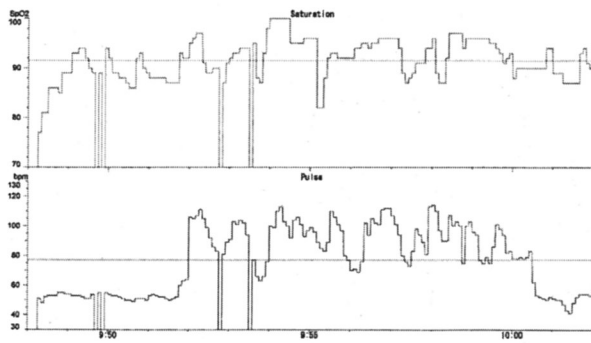


Fig.4 6 Time's Data of InfantA(Morning Meeting)

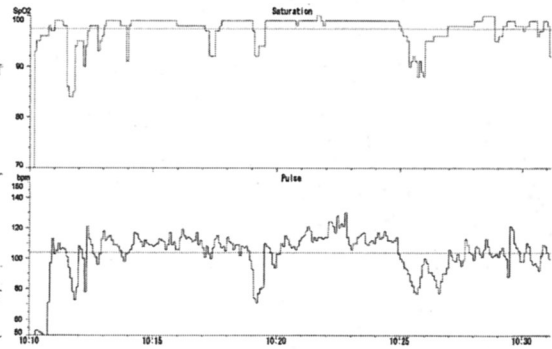


Fig.5 6 Time's Data of InfantA(Snoezelen)

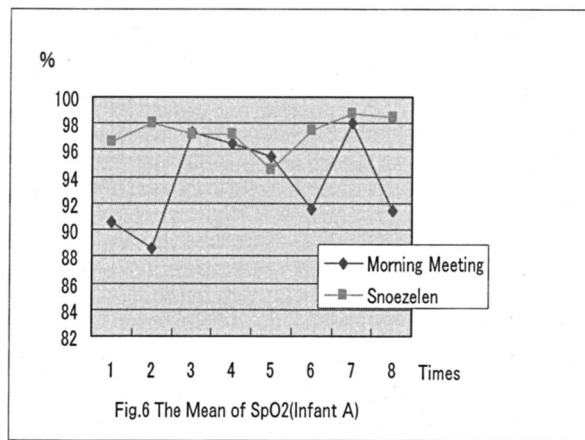


Fig.6 The Mean of SpO2(Infant A)

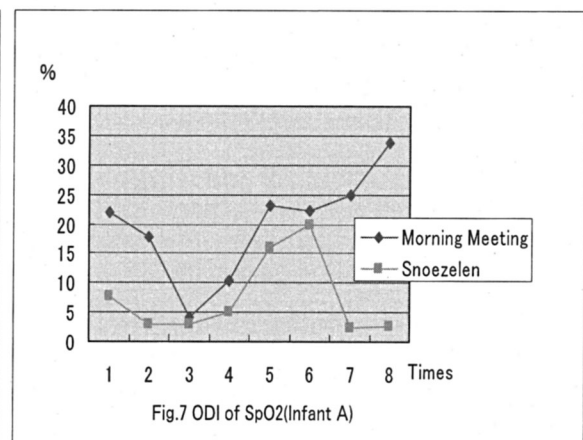


Fig.7 ODI of SpO2(Infant A)

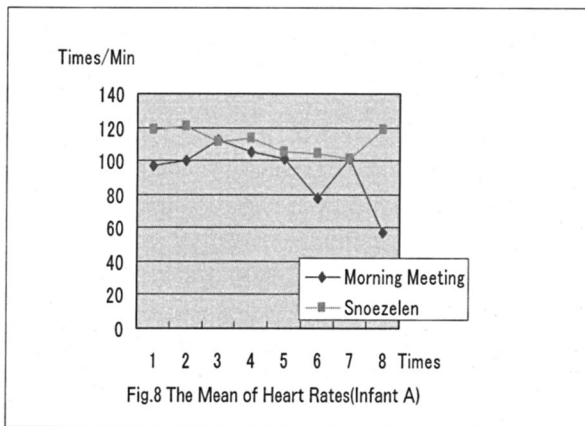


Fig.8 The Mean of Heart Rates(Infant A)

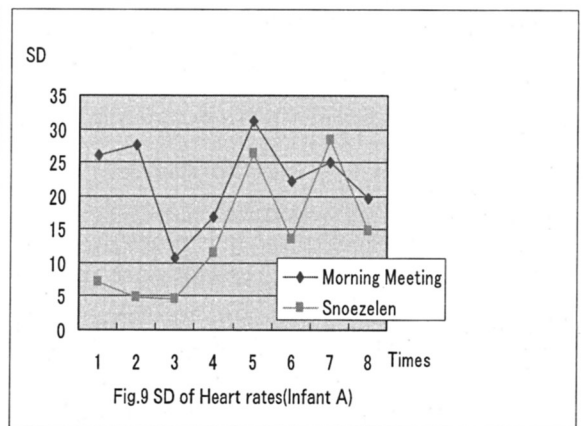


Fig.9 SD of Heart rates(Infant A)

Results

Infant A, B, and C all participated in the morning meeting activities with support including assistance by their mothers. In addition, the main behavior observed in Snoezelen sessions was: Infant A focused attention on the bubble tube, spoke, moved a hand and swatted the bubble tube many times. Infant B did not move while watching a picture projected by a projector, and used her right hand to haul in a fiber glow lamp towards her body. In addition, infant C touched the fiber glow lamp with both hands, and hauled it towards his body.

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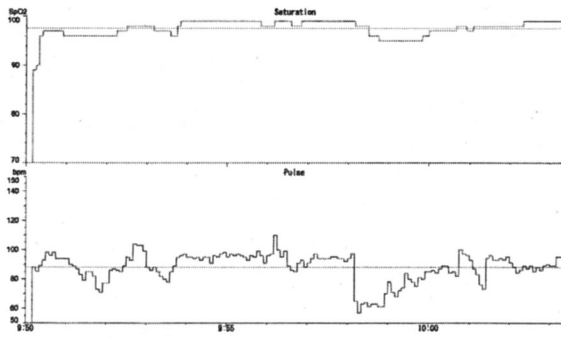


Fig.10 5 Time's Data of InfantB(Morning Meeting)

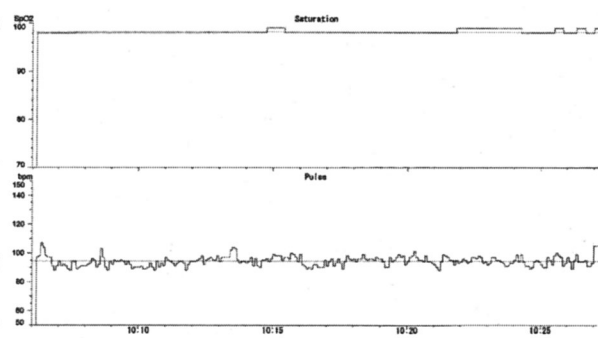


Fig.11 5 Time's Data of InfantB(Snoezelen)

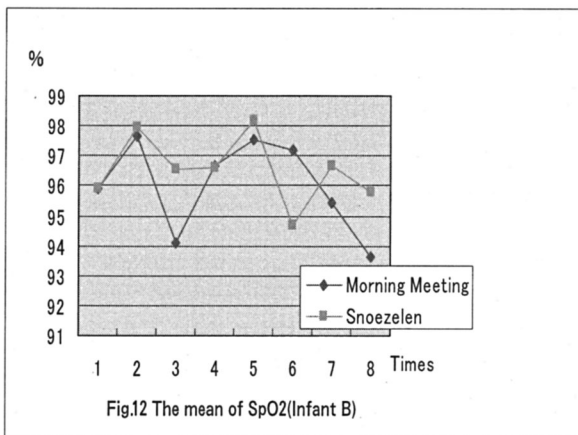


Fig.12 The mean of SpO2(Infant B)

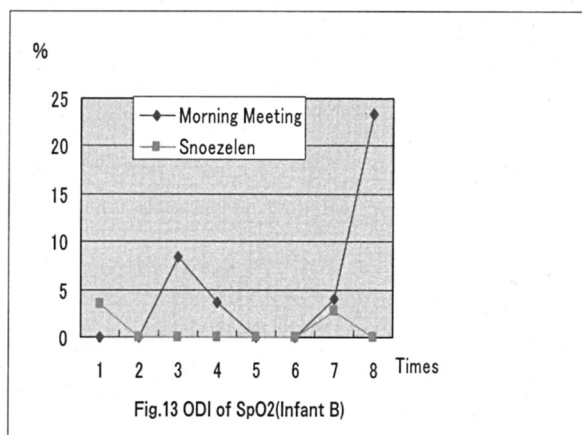


Fig.13 ODI of SpO2(Infant B)

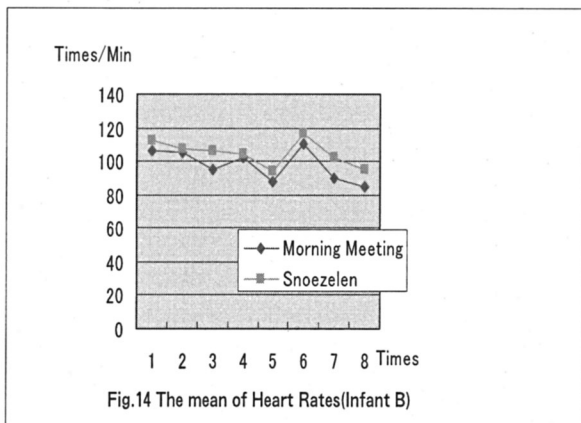


Fig.14 The mean of Heart Rates(Infant B)

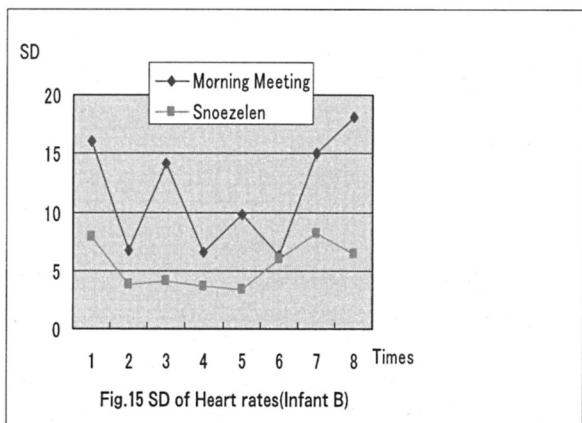


Fig.15 SD of Heart rates(Infant B)

The following figures show data for infants in both the morning meeting and Snoezelen scenes: average SpO₂ values are shown in Figures 6, 12 and 18; ODI (number of times that SpO₂ decreased by 4% or more per minute) is shown in Figures 7, 13 and 19; average heart rates are shown in Figures 8, 14 and 20; heart rate standard deviations (SD) in Figures 9, 15 and 21.

As seen in Figures 6, 12 and 18, infants A, B and C did not exhibit significant differences in average SpO₂ in the morning meetings nor in Snoezelen scenes. Figure 7 shows infant A exhibited significant decreases in ODI of SpO₂ in Snoezelen scenes ($P < .01$). Figure 13 shows infant B also exhibited significant decreases in ODI of SpO₂ in Snoezelen scenes ($P < .05$). Figure 19 shows infant C also exhibited a

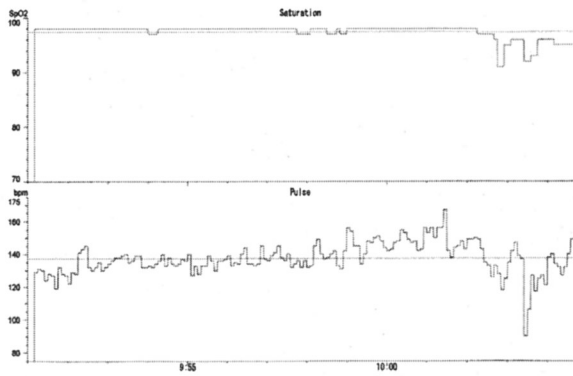


Fig.16 4 Time's Data of InfantC(Morning Meeting)

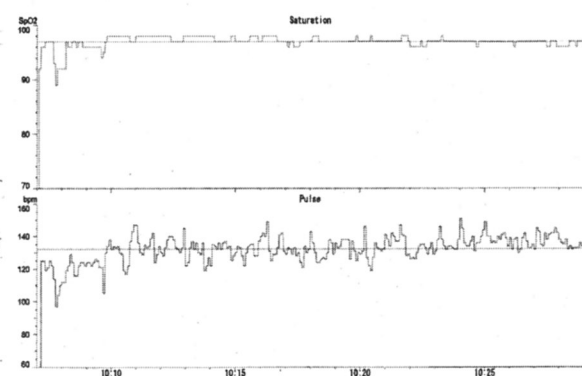


Fig.17 4 Time's Data of InfantC(Snoezelen)

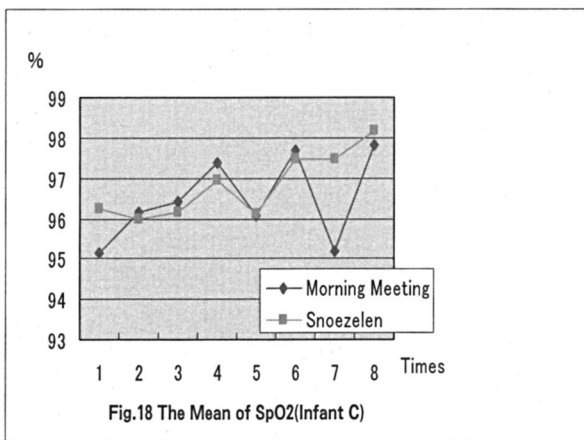


Fig.18 The Mean of SpO2(Infant C)

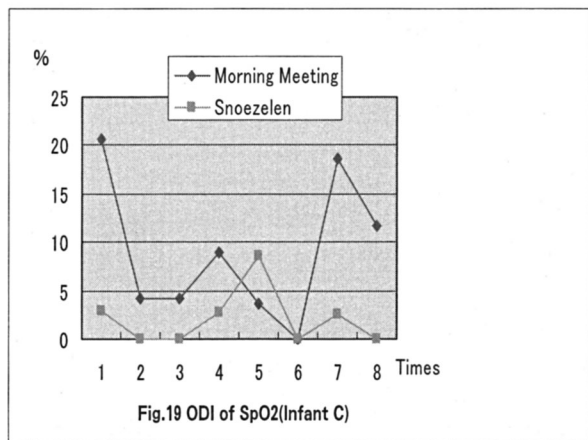


Fig.19 ODI of SpO2(Infant C)

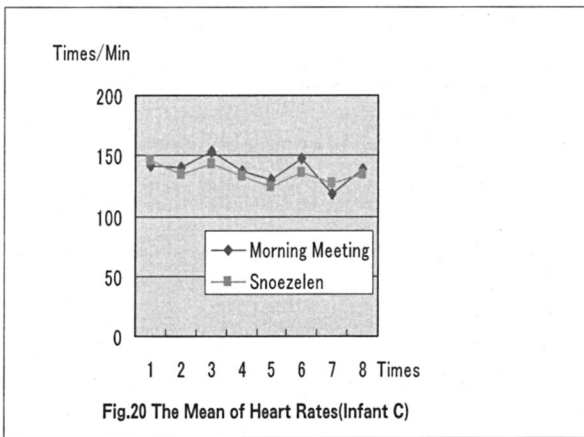


Fig.20 The Mean of Heart Rates(Infant C)

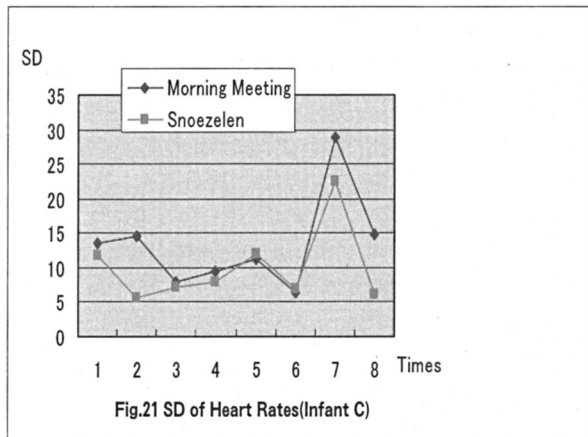


Fig.21 SD of Heart Rates(Infant C)

significant tendency in ODI of SpO₂ in Snoezelen scenes (P<.10). Figure 8 shows infant A exhibited significant heart rate increases in Snoezelen scenes (P<.05). Figure 14 shows infant B also exhibited significant heart rate increases in Snoezelen scenes (P<.01).

Figure 20 shows infant C did not exhibited significant heart rate differences in Snoezelen scenes nor in morning meetings. Figure 9 shows infant A exhibited significant decreases in heart rate SD in Snoezelen scenes (P<.05). Figure 15 shows infant B also exhibited significant decreases in heart rate SD in Snoezelen scenes (P<.01). Furthermore, Figure 21 shows infant C exhibited a significant tendency in heart rate SD in Snoezelen scenes (P<.10).

Discussion

Compared to morning meetings, SpO₂ fluctuations decreased in Snoezelen scenes, and breathing stabilized for infants A, B and C. In addition, average heart rates rose a little for two of the three infants (A and B). It is thought that this upward tendency of heart rates is due to effects of visual and other sensual stimulation, which excited them.

Furthermore, infants A, B and C exhibited a tendency for decreased fluctuation in heart rate SD. Therefore, for infant A with severe motor and intellectual disabilities who can move, and also for infants B, C with severe motor and intellectual disabilities who move little, Snoezelen scenes were effective for psychological stability and promoting relaxation. These findings support the results of previous research by Anezaki (Anezaki, 2004).

Therefore, it may be said that the relaxation effect of Snoezelen scenes became clear for not just one infant, but also for multiple infants with severe motor and intellectual disabilities.

But in the case of C infant younger than three years, different tendency was seen from a result of this study. In Fig. 20, it is thought in particular that it cannot receive environment of Snoezelen enough that there is not significant difference for mean of Heart Rates.

In other words it is still thought that sensory organs are enough in an undeveloped state only as for accepting by the stimulation of the circumference.

In this study, there are few numbers of the example infants, but, in the case of C infant, what cannot receive environment of Snoezelen enough is supposed with under 3 years old. In other words it may be said that the development of some sensory organ is necessary to enjoy environment of Snoezelen.

In growth and the development of the infant, the stability of emotions (psychological stability) is said to be the first main issue.

Matusaka (1998) points out both, that especially in the case of the infant with disabilities, emotional immaturity is observed in comparison with the normal infant, and emotions of the infants with disabilities easily become unstable (Mertens, 2003).

If we consider this point, it may be said that Snoezelen makes large contributions to the growth and development of infants with disabilities, because it works to stabilize their emotions.

In addition, combining results from this research and from previous research of several other countries (White, 1997; Shapiro et al, 1997; Diepen et al, 2002; Baillon et al, 2004; Anezaki, 2004), it is clear that Snoezelen had relaxation effects on a wide range of subjects: infants with severe motor and intellectual disabilities, seriously ill children, mentally disabled children, and people with dementia etc.

On the other hand, it is pointed out that Snoezelen has both the aspects of educational activity, and care and treatment activity (Brehmer, 1994; Mertens, 2003; Anezaki, 2004). Thus the relaxation effect of Snoezelen can be used for educational effects, or for care and treatment. Therefore, it is possible to establish either education or care / treatment as the goal to be evaluated for a Snoezelen activity. It is thought that this does not contradict the idea of Snoezelen.

In other words, the caregiver and the teacher snuggle up with the subject while primarily enjoying the Snoezelen environment together, and they may also set a goal to work towards promoting relaxation as education or as care and treatment.

As a result, this means that we do not always assume the need for large spaces and extensive equipment

to carry out Snoezelen. It is thought that even a small space and minimal equipment can engender sufficient relaxation effect.

Therefore, I will use corners of one room of a hospital and a classroom of a school and a home room in the future. I believe that it should be possible to utilize Snoezelen effectively with little equipment. This means that Snoezelen can be utilized easily anywhere. But it is necessary to secure a quiet place where it is easy to concentrate on Snoezelen which one can provide individual care and treatment based in the principles of the Snoezelen context.

Snoezelen is a site for medical care / care and treatment, or for education. It is hoped that Snoezelen will be widely utilized as part of therapy or educational activities, freely as for not enjoying it in the future.

In this research, there were only 3 subjects for analysis. For further empirical research in the future, it is necessary to increase the number of subject infants with severe motor and intellectual disabilities.

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