

Comparative examination of the effects of the SAT-DVD Learning Program Therapy and the Qigong (the traditional Chinese breathing exercise) Therapy to alleviate stress in cancer survivors

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Summary

[Purpose] This study aimed to examine the stress-alleviative effects of the self-learning SAT Imagery Therapy recorded on DVD (hereinafter called as SAT-DVD) in cancer survivors. With the qigong therapy, a representative alternative medicine that makes use of images, as the control group, various changes before and after the intervention were examined to alleviate depression, psychological traits and biochemical indexes of salivary immunity.

[Methods] The subjects were 17 cancer survivors (aged 52.2 ± 8.7). The study design: Prospective, pre/post-test intervention, single-arm trial Intervention Methods: the qigong therapy, SAT-DVD watching therapy. Psychological indexes were measured by means of self-report questionnaire before, immediately after and one week after each intervention of the qigong practice and SAT-DVD watching. Saliva for test was collected before and after each

intervention and was analyzed statistically. Measured items: Distinction of sex, age, and psychological indexes (scales of depression, self-control, difficulty of emotional recognition, problem solving, dissociative identity, and trauma syndrome).

[Results and Discussions] As to the biochemical indexes, significant decline of the adrenocortical hormone level after the qigong intervention and significant rise of salivary secretory immunoglobulin level after SAT-DVD watching were observed. As to the psychological indicators on the other hand, no significant change was observed in the scores of any psychological characteristics after the qigong intervention while significant decline was observed in the scales of depression, self-control, difficulty of emotional recognition and the scores of trauma syndrome after the SAT-DVD watching.

It was presumed that improvement of self-image and alleviation of depression was the possible means that SAT-DVD watching therapy improved immunity responses (the increase of salivary secretory immunoglobulin) in the cancer survivors.

Keyword: cancer survivor SAT stress management depression salivary SIgA
salivary cortisol

1. Introduction

The number of cancer survivors in Japan is estimated to have reached 3,650,000 at the year-end of 2004 and is forecasted to increase to as many as 5,000,000.¹⁾ According to the study by Hoffman et al on cancer survivors in the US, long-term cancer survivors are at increased risk of experiencing serious psychological distress compared with people who have never been diagnosed with cancer.²⁾ Also in Japan there are indications of problems of mental health for rapidly increasing cancer survivors, and particularly problems of their living with fears of recurrence and metastasis of cancer.³⁾ The measure from the view point of mental health is an urgent need for the cancer survivors since the very fear has indirect effects to intensify stress and prevent spontaneous cure. When it comes to a relation between cancer and psychosocial factors, studies on the relation between cancer and personality have been known for a long time. Suppression and denial of emotional expression, failure in coping with stress, and Type C personality⁴⁾ characteristically with such resigned reactions as hopelessness and helplessness have been reportedly related to outset and progression of cancer. According to Maeda et al⁴⁾, the self-suppression type (self-suppression aiming to be appreciated by the people around) and the type of difficulty in recognizing emotion (having difficulty in recognizing own emotion and inclination to keep going to the end without seeking assistance from the people around) are remarkable as the character traits of the patients after gastric cancer resection. To be more precise, they have difficulty in recognizing their own senses and emotions and they have little inclination to express themselves but they are very much persevering. In addition to the above,

Munakata⁵⁾ indicated that the dissociative identity type (to see one's own matter as if it were somebody else's in order to remain calm), the problem avoidance type (to avoid facing a matter squarely and tackle anything with a super-positive attitude of mind) and the self-pity type (to look at oneself with pity) are also remarkable as the character traits of the patients after gastric cancer resection. By all accounts, they have difficulty in recognizing their own senses and emotions, seeking help from the people around and facing up the reality. Also, they are apt to take a super-positive attitude of mind and keep going to the end tenaciously alone. Some people explain that the immunity against tumor cells gets lowered because they cannot openly express their displeasure, try to carry out all the way through their duties over-seriously and thus keep stress chronically in. Many a prospective cohort study on a causal relation between cancer-prone personality and onset of cancer reports the relationship between onset of cancer and depression and emotional suppression.⁶⁾⁻⁸⁾ On the other hand, there are some reports indicating no clear relationship between them.⁸⁾⁻¹¹⁾ Thus academic opinion is still divided on this question.

Personality is made up in the core of temperament that is subject to genes and self-image script that creates the behavioral traits based on the temperament. As to the characters related to stress, there are in the core some hereditary temperament such as anxiety-prone temperament and tenacious temperament that is highly sensitive to stress. When people have experiences of birth trauma and infancy trauma, the self-image of the others-reward oriented type which easily over-reacts to stress remains in their memory, the scripts for their behavioral traits are finished,

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and as a result the stress-prone temperament such as self-suppressive, difficult to recognize emotion, and problem avoidant are believed to be formed.

A person with the stress-prone temperament easily stretches his/her sympathetic nerve and is forced to continuously secrete adrenaline. Consequently, it easily leads to the decrease of lymphocytes in a leukocyte and the increase of granulocyte due to the continuous secretion of adrenaline. The active oxygen released from granulocyte serves to exclude foreign matters entered into the body. It is suggested at the same time that it may possibly cause the outset of cancer by damaging cells and nucleuses and genes in cells.¹²⁾

According to some previous reports, cancer patients are so aspiring having strong tenacious temperament, so thick-skinned that they would not recognize their own emotions and senses, and so solitary without trying to seek help from others. They try to keep going to the end with the other-reward oriented behavior so that they may be appreciated by other people. They tend to lack in communications with their families and their family relationship is weakened.¹³⁾¹⁴⁾ If we look at it from a different angle, the disease called in the name of cancer has some truth to help the patients find the original way they feel in accordance with their inherited genes, and also find the necessity of enjoying themselves, of mentally communicating with families, and of the self-reward oriented behavior with which they may seek self-satisfaction and appreciation.¹⁵⁾

On the hypothesis that stress has an influence on the outset of cancer, lots of psychotherapy have been conducted for cancer patients both domestically and abroad. Making the survey of studies on psychological interventions with the study design of randomized clinical trials, we learn,

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from a study on the intervention to breast cancer patients with symptoms of metastasis, life prolonging effect of the intervention for those in the intervention group.¹⁶⁾

Although longer survival was denied in the follow-up trials, the intervention has proved to have effects to decrease psychological stress and ease pains.¹⁷⁾ Post operative patients of malignant melanoma in the short-term cognitive behavioral intervention group reportedly showed more increase in the ratio of NK cells compared with those in the control group.¹⁸⁾¹⁹⁾ It is reported by Rehse et al²⁰⁾ that psychological intervention is valid for improving QOL based on the results of meta-analysis concerning the effects of psychosocial intervention for adult cancer patients. While on the other hand, we see, among studies on randomized socio-psychological intervention, some negative reports that psychological intervention is not effective for longer survival.²¹⁾²²⁾ Notwithstanding accumulated researches and studies as seen above, It is hard to say that evidences for the effects of psychological intervention have been amply provided.

The SAT imagery therapy helps the patient become aware how the self-image is changed with the changes in other past images as if he/she were brought up by an unconditional caretaker under improved conditions for his/her own growth. According to our clinical research, it confirms the weakened behavioral traits of others-reward oriented type such as self-suppression and difficulty in emotional recognition, as well as the significant effect to enhance the immunity responses (to increase lymphocyte count and degree of activation) and the rate of tumor suppressor gene expression.²³⁾²⁴⁾²⁵⁾

In practice, a hypothetical way is used in the SAT imagery therapy: The patients, with the meditative imaging technique to go backwards to the past in the evolutionary process (self - a fosterer - an ancestor - a biological being - a particulate being), experiences time regression. And in the newly created image, their past are changed as if their growing background were improved and as if they were brought up by those who offered unconditional care. Then, the self-image is also changed in some way or another. In order for them to form their future self-image, we help the patients become aware of the self-image script that they were brought up under natural growing background with unconditional care although it has not been transmitted from their ancestors over generations. And we encourage them to become aware of the action plans (major, middle, and minor objectives) for realizing the improved self-image script. It is the Third Generation Cognitive Behavioral Therapies with which emotional change, cognitive change and behavioral change are promoted. We, on the basis of the SAT Imagery Therapy, have been developing the stress management system with resources available for cancer patients for increasing their mental health, immunity and expression of tumor suppressor genes.

The purpose of this study is to examine the effects of the SAT self-learning program recorded on DVD with a control group as a basic study for developing a stress management e-learning program for cancer survivors utilizing web-technique and the SAT Imagery Therapy. We adopted the qigong therapy and set it as a control group, partly because it is utilized by many cancer survivors though it is different from this program in utilizing physical exercise, and partly because it, utilizing various images, shares common feature of imagery therapy with this program.

It is hypothesized that watching the SAT-DVD self-learning program for cancer survivors with the control group of the qigong therapy may alleviate depression, change psychological traits, improve immunity responses/salivary corticosteroid index.

2. Method

Theoretical Background

The Qigong Therapy: The basic elements of the qigong are said to be the control of body, breathing and mind. The autonomic nervous system gets stabilized by moving the body, catching the breath and relaxing. By exercising the so-called “space time method” centered on the solar plexus breathing, the effects to prevent recurrence and metastasis of individual disease by site are expected for cancer patients.²⁸⁾

SAT-DVD self-learning program: With this approach to let cancer survivors watch SAT-DVD, we aimed to let them weaken the image of expected death and alleviate the fears by having a sense of gratitude for being alive and change their behavior from the self-reward oriented type to the others-reward oriented. A couple of learning assistants sat in company with the subjects of one to four in number each time and supported their learning through watching the SAT-DVD including PC operations. It took 90 minutes only each time for watching the SAT-DVD. Details of the support are shown in Table1. The SAT-DVD watching was executed with interval of 2 to 3 weeks after the qigong intervention.

Table 1 Contents of each intervention program

	Purpose of intervention	time (min)	basal skill	contents
The Qigong Program	lecture	10		Lectures of <i>Koku</i>
	Practice of Qigong	45		1. Preparatory exercises 2. To become familiar with qi (energy) 3. To feel the rhythm at the water's edge 4. To interchange with empty space 5. Closing exercise
SATDVD program	Introduction and guidance Relation of cancer with stress	5		Lectures on the influence of stress on cancer, immunity responses and defensive strength of genes
	E-coaching based on the stress management by self-understanding Self-image in which stress is easily accumulated To promote the self-understanding on hereditary stress-prone temperament To promote balancing self-reward oriented type of living with others' reward oriented type	10	Health Coaching	To promote recognition of influences of stress on the onset and the course of cancer, and of stress-prone characters such as high level of self-suppression, difficulty in emotional recognition, problem avoidance, trauma, and low level of sense of self-value.
		15	Temperament Coaching	To promote the self-understanding and understanding the other people through knowing of the inborn and hereditary temperaments. To promote checking the self-care activities corresponding to respective temperaments, and setting detailed objectives for self-care items in which self-confidence to carry out is low.
	Reconstruction of Self-image Script To promote recognition of the innate self-image and to set the objective for fixing a narratively positive self-image To promote recognition of "the innate self" of self-reward oriented type and also to promote empowering the identity by setting concrete and detailed objectives	15	The future self-imagings	The past image of aversive memory produces negative cognition on the present and the future. To create a rewarding self-image script for the future innate self without referring to past memories To promote setting the concrete objectives of self-rewarding type showing what should be done to live with the innate self through learning the gap between the newly created self-image and the present actual one
	30	Self-imagings of a spatial particle	To make the self-image go back to the age of space, origin of all things Imagings work to reconstruct, via the visualized image of favorable light in the space, an evolutionary passage for the self-image starting from a spatial particle, going through a living thing and reaching a man To form the positive self-image to have been loved unconditionally, to learn the gap between the innate self-image and the actual one in the same manner in the method of imaging the future self, and to promote setting the concrete objectives for the self-reward oriented type seeking the way to live the innate self.	

To promote their self-understanding the temperament coaching therapy and psychological trait checking were utilized. Hereditary temperament, nucleus of one's nature consisting of hereditary factors and biological factors related to neurotransmitter, does not change throughout

one's lifetime. Among them all, those who have either "the Persistence Type of Temperament" observed in perfectionists or "the Anxiety Type of Temperament" represented by pessimism and tendency to be opinionated are inclined to become fearful, solitary and stressful. So they needed to be coached for their self-care activities.

Furthermore, in order to help them change their self-image of suppressing the self and accumulating it in the soul, blunting the emotion, and staying the course at the sacrifice of the self, to the new one of enjoying the own life, and exchanging heartfelt communications with their families and friends, we let them experience the two kinds of imaging works used in the SAT imagery therapy as shown in Table 1. We helped them notice the necessity to change their behavioral trait to the one of the self-reward oriented type that is hard to accumulate stress by way of letting them know the gap between the innate self obtained through these exercised self-image trainings (the self protected and brought up at will) and the actual one.

Research Collaborators

A meeting for explaining the study was held for participants to the qigong class sponsored by a clinic specialized in cancer treatment in the Tokyo metropolitan area, and research volunteers were collected among them. On explaining the objectives and meaning of the research, close attention was paid by the researchers including one in charge of practicing qigong to keep neutrality so that any biased information might not be inputted. There were 34 prospective research volunteers: 17 cancer survivors and 17 healthy individuals including families of cancer

survivors. The intervention period lasted about one year: December, 2007 ~ February, 2008.

Participants

The 17 cancer survivors who had agreed to the explanations on the intended and meaning of the research were set as the analysis subject. Healthy individuals were excluded from the analysis for the purpose of the study was to examine the stress management therapy for the cancer survivors. As to the changes in the psychological indexes, analyzed were the 15 subjects (2 males and 13 females) excluding 2 who were not available at the time of research conducted 1 week after the intervention. Attributes of the study participants are shown in Table 2.

Table 2. Attributions of the analysis subjects and the kinds of cancer they are now contracting

Attributions				
Sex	male	4	female	13
Years of age	52.2±8.7			
Marital status	Married	11	single	6
Living pattern	together	14	alone	3
Length of morbidity(years)	4.6±8.7(0.5-23)			
Kinds of cancer caught	number (%)			
	Breast cancer			5 (29.4)
	Uterine cancer			2 (11.8)
	Pancreatic cancer			1 (5.9)
	Gastric cancer			1 (5.9)
	Oral / lip cancer			1 (5.9)
	Liver cancer			1 (5.9)
	Prostate cancer			1 (5.9)
	Lung cancer			1 (5.9)
	Others (including the cured)			4 (23.4)

Ethical Considerations

Approval was obtained for this study from the Board of Examination of Epidemiological Study, the University of Tsukuba. Explanation on the intended meaning of this research was made in writing and orally to the subjects and the research was conducted after obtaining the agreement of the subjects.

Study measures

Psychological traits

1. Self-rating depression scale (SDS, Zung)²³⁾ [20 items, maximum of 80 points]: SDS is a measure of depression. The higher the points are, the higher the depression.
2. Scale of self-suppressive behavioral trait (Munakata, 1996)²⁴⁾²⁵⁾ [10 items, maximum of 20 points]: The scale measures the expectations of favour from those people around by suppressing own emotions to satisfy those around. The scale comprises of 10 items; 2 points is given to “always so”, 1 point “usually so” and 0 point “not so”, with total scores of minimum 0 to maximum 20 points.
3. The scale of problem solving behavioral trait (Munakata, 2001)²⁵⁾ [10 items, maximum of 20 points] : This is the scale to measure the behavioral trait to try to positively, effectively and

realistically deal with the tasks and problems standing in front. The scale comprises of 10 items including "In anything I rather make judgment while confirming the fact". The higher the points are, the more remarkable is the trait to try realistically dealing with the problem for solution. Lower points in this item suggest the tendency to repeat the same kind of failures and errors for postponing the solving of problems without facing up to the reality. It is also believed that there exist some stressful memories with aversive emotions behind the low points in this item.

4. The scale of difficulty in recognizing emotions (Munakata, 2001)²⁵⁾ [10 items, maximum of 20 points]: This is to measure the tendency of difficulty in recognizing emotions that is to endure the hardship without getting emotional and to easily somaticize stress.

5. The scale of the dissociative identity (Munakata, 2001)²⁵⁾ [10 items, maximum of 20 points]: This is to measure the scale of dissociative identity, that is the split self, one being embarrassed with a serious problem and the other calmly watching the former. The higher the points for this item are, the stronger is the emotion of dissociative identity such as fear, impatience and panic.

6. The scale of the post-traumatic stress syndrome (Munakata, 2001)²⁵⁾ [10 items, maximum of 10 points]: This is to measure the seriousness of traumatic stress symptom. The higher the points for this item are, the stronger is the emotional reactions under a specific key situation with the recognition of trauma.

Biochemical Indexes

In order to examine the stress management effects of practicing the qigong program and SAT-DVD electronic self-learning program for the participants, saliva was collected before and after the qigong class and SAT-DVD watching, and then the changes in the salivary corticosteroid and salivary SIgA were measured.

1. Salivary corticosteroid (Cortisol): Steroid hormone secreted from adrenal cortex is discharged into the blood and then is carried to saliva. It is said that stress can be quantitated to some extent by them.²⁶⁾ It is known that there is a time lag of about 20 to 30 minutes between stressor and response.

2. Salivary Secretory Immunoglobulin A (salivary SIgA): Salivary SIgA has a major function in mucosal immunity. It is said that under stressful conditions the concentration of SIgA, a complement component of immunity in saliva, is lowered.²⁷⁾

Analysis

Responses to the questionnaire were collected 5 times in total, namely, before the intervention, immediately after the qigong class, one week after the qigong class, immediately after watching

SAT-DVD self-learning program, and finally one week after watching SAT-DVD self-learning program.

Psychological indexes of the 15 subjects were measured before, immediately after and one week after intervention. Their biochemical data, measured before and immediately after intervention, were statistically analyzed. Normality of psychological indexes was checked, and the two way repeated measures (within subjects × within subjects) analysis of variance (ANOVA) was conducted. As to the changes in biochemical data, the Wilcoxon Test, which is a non-parametric statistical hypothesis test, was used due to the large scale individual variation of data.

3. Results

The changes in biochemical indexes between pre- and post- intervention (Table 3)

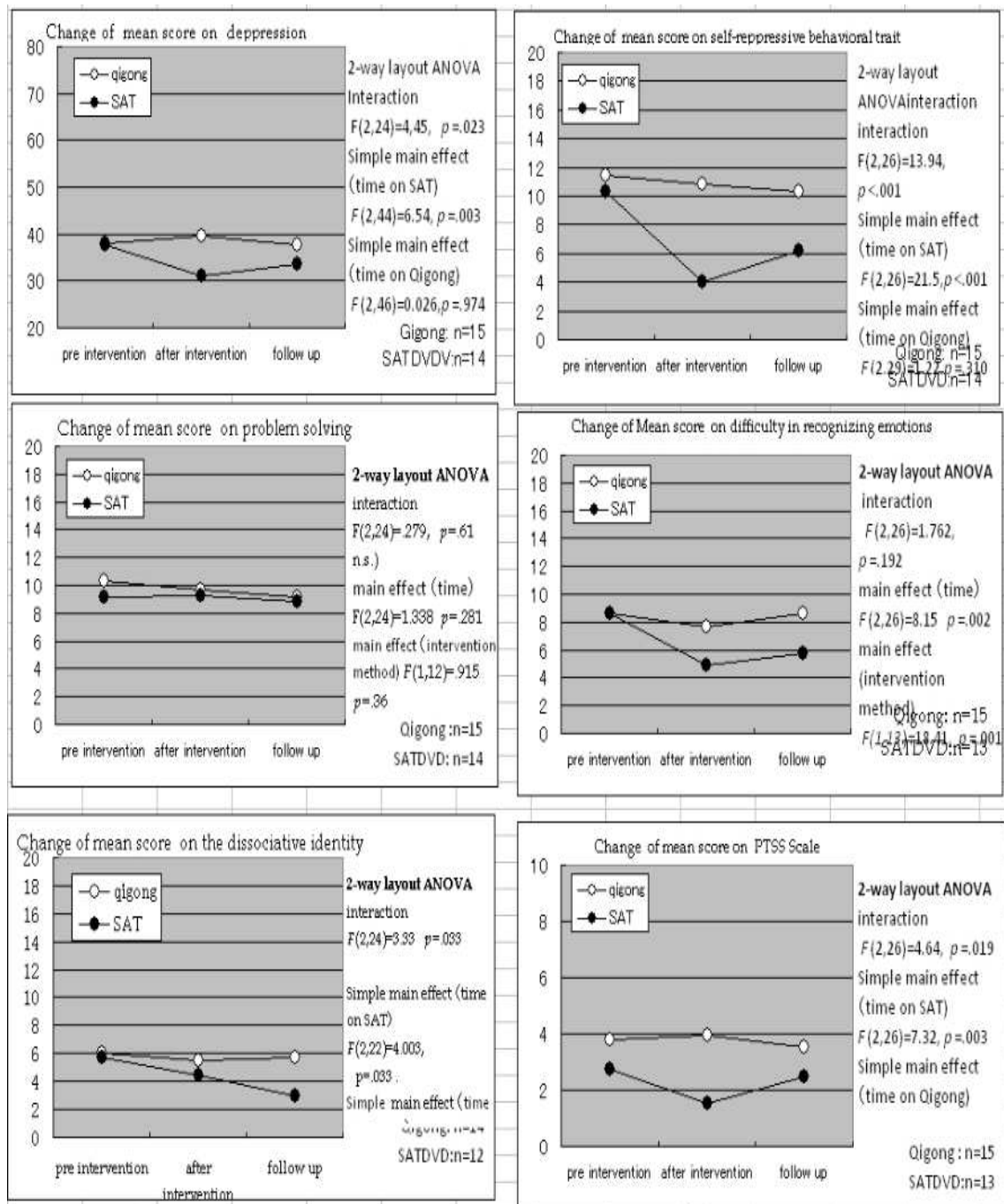
Table 3. Changes in immunity responses of subjects on each program (n=17)

		before intervention	after intervention	Z	p value
Qigong	cortisol (µg/dL)	0.49	0.35	-2.23	0.03
	amylase (U/L)	194820.00	195330.00	-0.34	0.73
	sIgA (µg/mL)	356.50	452.70	-1.82	0.07
SATDVD	cortisol (µg/dL)	0.40	0.31	-1.19	0.23
	amylase (U/L)	78500.00	188700.00	-0.23	0.82
	sIgA (µg/mL)	328.30	681.00	-2.27	0.02

Before and after each intervention of the qigong practice and the SAT-DVD watching examined was how the secretion levels of salivary corticosteroid and salivary SIgA immediately after and 1 week after intervention were changed in comparison with those before intervention. Significant

decline of corticosteroid was observed after the qigong intervention ($Z = -2.23, p = 0.03$). Also significant was the observed rise of salivary SIgA after the SAT-DVD watching ($Z = -2.27, p = 0.02$).

The changes in psychological traits before and after the intervention (Figure 1)



Scores for the qigong therapy and the SAT-DVD e-learning program before, immediately and 1 week after intervention were analyzed with the repeated measures (corresponding × corresponding) two way analysis of variance (ANOVA). As a result, the interaction effects between time and intervention were observed in the self-rating depression scale ($F(2,24)=4.45$, $p=.023$). Now after the examination of simple main effect by the intervention method, the decline of the self-rating depression scale was observed in the SAT-DVD watching group while no such change was confirmed in the qigong group. As the result of examination by multiple comparison, improvement of the self-rating depression scale was observed by the fact that it turned out to be significantly lowered immediately and 1 week after watching compared with the one before watching (before intervention – immediately after intervention; $p<.05$, before intervention – 1 week after intervention; $p<.05$).

Then, the interaction effect of time by intervention was confirmed in the scale of self-repression ($F(2,26)=13.94$, $p<.001$). Now after the examination of simple main effect, significant decline of scale of self-suppression was confirmed in the SAT-DVD watching group ($F(2,26)=21.5$, $p=.001$) while no significant change was observed in the qigong group either at three points of time of the qigong intervention ($F(2,29)=1.219$, $p=.310$, n.s.). With the fact that in multiple comparison the scores were significantly lowered at both points of time, immediately and 1 week after intervention compared with those before intervention (before intervention - immediately after intervention; $p<.05$, before intervention - 1 week after intervention; $p<.05$), the weakened self-suppression and promoted self-expression were observed.

Significant change was seen in the scale of problem solving behavioral trait neither as the interaction effect of time by intervention nor as the simple main effect of respective time and intervention (interaction effect: $F(2,24)=.279$, $p=.61$, simple main effect (time): $F(2,24)=1.338$, $p=.281$, simple main effect (intervention method) : $F(1,12)=.915$, $p=.36$).

The interaction effect of time by intervention was not confirmed in the scale of difficulty in emotional recognition ($F(2,26)=1.762$, $p=.192$, n.s.), but the simple main effect was confirmed both at the time of intervention and in the intervention method (intervention method: $F(1,13)=18.41$, $p=.001$; time of intervention: $F(2,26)=8.5$, $p=.002$). Significant changes in scores by the timing of intervention were confirmed between the two groups. With the fact that in multiple comparison the scores were significantly lowered for the SAT-DVD watching group at both points of time immediately and 1 week after intervention compared with those before intervention (before intervention - immediately after intervention; $p < 0.5$, before intervention - 1 week after intervention; $p < .05$), blunting of emotion was confirmed to be alleviated.

The interaction effect of time by intervention was confirmed in the scale of the dissociative identity ($F(2,24)=3.33$, $p=.033$). Now after the examination of simple main effect by the intervention method, significant decline of scale of the dissociative identity was confirmed in the SAT • DVD watching group while no significant change was confirmed in the qigong group (simple main effect; at the time of intervention for SAT-DVD watching group: $F(2,22)=4.003$, $p=.003$ at the time of intervention for the qigong group: $F(2,29)=0.062$, $p=.94$). After the examination with multiple comparison, significant changes in scores were confirmed by the timing of intervention.

With the fact that in multiple comparison the scores were significantly lowered for each group 1 week after intervention compared with those before intervention (before intervention - immediately after intervention; $p < 0.5$, before intervention - 1 week after intervention; $p < .05$), tendency of the dissociative identity was confirmed to be weakened.

The interaction effect of time by intervention was observed in the scale of the post-traumatic stress syndrome ($F(2,26)=4.64$, $p=.019$). Now after the examination of simple main effect by the intervention method, significant changes in scale of the post-traumatic stress syndrome were observed in the SAT-DVD watching group, and after the examination with multiple comparison, the scores were significantly lowered for the SAT-DVD watching group at both points of time, immediately and 1 week after intervention, compared with those before intervention (before intervention - immediately after intervention; $p < 0.5$, before intervention - 1 week after intervention; $p < .05$),

As to the contents of the program, many of the participants looked to have enjoyed their imaging experiences in both programs as seen in the following opinions; "It was an enjoyable work to image the space and the interior of the womb. I heard in the practice of qigong that we were linked with the space. I was excited with the sense of going to and from the space." "I was entranced as if I had been in a dream."

As to the SAT-DVD watching, many of the participants looked to have realized the necessity to live in a relaxed manner as seen in the following opinions; "I suffer from trifling matters in my

everyday life. I wanted to live in an easy state.” “I thought I had improved fairly successfully my ways of thinking and living in my own way, but I was awoken to the fact that actually I had been leading conventional life with an idea that it must be so and so. Now I want to explore the possibility to realize myself in accordance with my visualized self-image by relaxing a bit more and trusting myself.”

As to the innate self-image and behavioral objectives for living with it, many of the participants looked to consciously practice the self-reward oriented way of living as seen in the following opinions; “From time to time I remember and image my inner self.” “I practice to live in accordance with my innate self-image.” “I practice looking at the displayed memo.”

4. Discussion

Changes in the biochemical indexes

In this study we examined changes in immunity responses for cancer survivors, taking the SAT-DVD watching and the qigong, one of the alternative medicines, as control groups. The qigong reportedly enhances spontaneous cure²⁸⁾, and also reported is that it is effective for decreasing leukopenia in case it is used in combination with chemotherapies for cancer patients.²⁹⁾ Density of salivary corticosteroid showed a significant decline immediately after the

qigong class, which suggested its effectiveness for alleviating stress. Corticosteroids increase

when human bodies are exposed to stress and tension while they decrease when human bodies are in the state of relaxation.²⁶⁾ Accordingly, the decline in corticosteroid was thought to be attributable to the acquirement of the state of physical relaxation by participation to the qigong class. However, it is known that the level of corticosteroid is subject to diurnal variation with its peak at 8 o'clock in the morning and gradual decline thereafter until noon.³⁰⁾ Since the qigong class was conducted from 9 o'clock until 10 in the morning, effect of diurnal variation on the decrease of corticosteroid cannot be denied, and therefore, there is a limit to insisting the unmixed effect of the qigong.

The decrease of corticosteroid in the blood was reported by Van der Pompe G et al as the result of 13 week short-term psychotherapy program for breast cancer patients, but no such significant change was seen in the density of corticosteroid by the comparison of the levels before and after our 90 minute SAT-DVD intervention. However, significant increase was observed in SIgA. It is known that SIgA reflects the psychosomatic stress. SIgA secretion is decreased by placing a burden of stress on the body or bearing negative emotions in mind.²⁷⁾ It was suggested as a result of this study that SAT-DVD watching, immediately after carrying it out, had stress alleviating effect.

It is said that salivary SIgA easily reflects psychosomatic stress²⁷⁾ while salivary corticosteroid rather physical stress. When the contents of the intervention program of this time are taken into consideration, the effect to alleviate psychological stress may have been reflected in the

SAT-DVD watching and the effect to alleviate somatic stress in the qigong class.

Changes in Psychological Indexes

By the qigong intervention, no change was confirmed in any psychological indexes. By the SAT-DVD watching on the other hand, improvement was confirmed in all the psychological indexes except for the behavioral trait of problem solving type. After all, those who participated in the SAT-DVD watching intervention program were promoted to change their self-image to the one in which negative events were hard to be grasped as mental damages, self-expression was easy and support from the people around was easily sought when necessary.

Surveying the interventions conducted in the past, reported was a case showing the effectiveness to alleviate depression with the combined use of Simonton's image control method for cancer care and biofeedback.³²⁾ In it, the correlation is studied between alleviation of depression and recovering "the identity" that can control disease by creating the image of own lymphocytes attacking and eating cancer cells. Reported also by Fawzy et al³³⁾ was that as the result of the psychological intervention by the supporting group (tackling the cancer problems with colleagues) the mortality rate of the subject group showed one third of the control group 5 years after intervention. Based on the past reports, the identity of the subject patient and the mutual supporting have been discussed as the factors of great importance to overcome cancer.

In the SAT-DVD program, unlike other conventional psychological interventions including cognitive behavioral therapies, the method without depending on the information based on the

memory of past experiences is used for promoting the patients to recognize their “innate self”.

To give a full account, if a behavioral change is resolved with the past self-image intact, it is nothing but an extension of the present way of living. Therefore, it is impossible to change one’s character demonstrated by behavioral trait. Human cognition and behavior are fixed by the self-image obtained from the information based on the memory of past experiences. We come to understand how we should better lead the life with the figure of innate self only when we recognize the difference between “the actual self” and the visualized image of “the innate self” in which we were protected unconditionally and lived at will. That we adopted an imaging work for reconstructing the inner self based on a certain hypothetical way seemed to be an important factor for the obtained result. If we give a thought to descriptive data including opinions together with changes in the psychological indexes, the followings seem to have been influential; ①the subjects realized their innate self, and ②they set the concrete and clear-cut behavioral plan which looked satisfactory and enjoyable for them and they themselves were able to realize that they were actually carrying out the plan. Among the measured behavioral traits, however, no significant change of score was observed in the behavioral trait of problem solving type. To enhance the ability of problem solving, additional approaches seemed necessary including showing the subjects a competent role model. Also, it was considered as one of the major causes that other latent psychological problems might remain unsolved and disturb enhancement of problem solving ability.

corticosteroid, but at the same time it showed changes neither in scale of depression nor in psychological traits. With the qigong therapy alone it seemed impossible to help the patients to realize, much less to change, the self-image script (the scenario by which behavioral traits were created) that caused stress disorders including cancer. If the qigong practice is used together with other programs including the reconstruction of the self-image script, however, it may possibly become an effective stress management therapy.

The SAT-DVD self-learning system has possibilities to provide many cancer survivors with care for stress compensating for the weakness of other individual intervention therapies in which the subject is limited to a small number of people.

The Limits of the Study and Future Tasks

We tried conducting the SAT-DVD watching program with the support by an intervention assistant as one part of the basic study for developing the SAT self-learning system utilizing DVD, but cancer survivors might not necessarily be familiar with PC operation. Therefore, the effects of the program conducted with the assistant's support in research of this time may be different from those of the program to be individually practiced by a patient alone. It is required henceforth to closely examine the effects of the program under the circumstances where a cancer survivor, operating PC alone, practices this program to be distributed through Web network. Furthermore, only short-term effectiveness before, immediately after and 1 week after the program intervention

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was examined in this study. It has been untouched and remains therefore as a future task to examine if the improvements of immunity response and depression are sustainable in the long run. As the research design this time, we adopted the methods conforming to the single-group time-series design and the crossover design. However, there was a limit to the study that influence of carryover effects cannot be eliminated since two different kinds of intervention were conducted to all the subjects in the same order.

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