Global Journal of Health Science; Vol. 9, No. 2; 2017
ISSN 1916-9736 E-ISSN 1916-9744
Published by Canadian Center of Science and Education

The Effectiveness of Dohsa Psycho-Motor Rehabilitation Method on Fatigue Severity, Sleep Quality, and Resilience Promotion of Patients with Multiple Sclerosis (MS)

Azam Azari[1], Hamid Kazemi-Zahrani[2] & Masoumeh Mohammadi Khashouei[2]

[1] Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Isfahan, Iran

[2] Department of Psychology, Payame Noor University, Tehran, Iran

Correspondence: Hamid Kazemi-Zahrani, Department of Psychology, Payame Noor University, P.O. BOX: 19395-3697, Tehran, Iran. E-mail: kazemi@nj.isfpnu.ac.ir

Received: March 12, 2016 Accepted: July 3, 2016 Online Published: July 6, 2016

doi:10.5539/gjhs.v9n2p201 URL: http://dx.doi.org/10.5539/gjhs.v9n2p201

Abstract

Because of multiple psychological-physical symptoms and failure to accept the reality, multiple sclerosis (MS), patients are suffering from negative mood disorders and fatigue which affects their life quality negatively. Therefore this study has been conducted to determine the effect of Dohsa Psycho-Motor Rehabilitation Method on fatigue severity, sleep quality, and Resilience promotion of Patients with Multiple Sclerosis in Isfahan, Iran. A quasi-experimental study with pre-test, post-test and follow up was administered on both the experimental and control groups. The population consisted of all patients diagnosed with multiple sclerosis in Isfahan with clinical and MS society records. By purposive sampling 30 patients were selected for the experimental (n=15) and control (n=15) groups. Patients completed fatigue (FSS), Scale of sleep quality (PSQI) and Resilience Scale (CD-RISC) questionnaire before the beginning of the treatment (pretest) and also later for post-test. Dohsa treatment duration was ten sessions, three sessions per week and their post test was administered 30 days later. Finally, data were analyzed using SPSS18. The results of the multivariable covariance analysis showed that Dohsa Psycho-Motor Rehabilitation Method decreases fatigue severity, increases quality of sleep, and resilience of patients with Multiple Sclerosis ($p<0.001$). Since MS disease has led to widespread symptoms and different clinical signs, MS patients may need psychological rehabilitation in the future, therefore Dohsa Psycho-Motor Rehabilitation Method is an effective treatment for reducing fatigue, improving sleep quality and increasing the resilience of multiple sclerosis patients.

Keywords: Dohsa psycho-motor rehabilitation methods, fatigue severity, sleep quality, resiliency, multiple sclerosis

1. Research Background

Multiple Sclerosis or (MS) is one of the most common nervous chronic diseases which symptoms indicate the involvement of multiple areas of the central nervous system. Since the disease is more common among young people and its disabling symptoms have continued for years, it can cause serious problems in society's health and wellbeing (Patani et al., 2007). MS disease causes symptoms such as muscle weakness, spasms, impaired sensitivity to heat and touch, pain, ataxia, unsteady walk, trembling, stress, anxiety, speech disorders, verbal disorders, dizziness, bowel and bladder dysfunction, sexual problems, depression, cognitive changes and fatigue (Farill, 2011).

Fatigue is the most common symptom in MS patients and is more common than other important symptoms such as mobility problems, spasms and weakness. This problem is approximately reported by one third of patients, 60-50% of patients call it the saddest sign of their disease (Lerdal et al., 2007). Many MS patients complain about cognitive fatigue resulted from cognitive function reduction over a work which needs a continuous activity (Morrow, Rosehart, & Johnson, 2015).

In general, given the fact that MS patients experience a wide range of symptoms including balance problems, movement disorders, fatigue and depression, physical exercises recently has been demonstrated as a medical complementary remedial option for these patients (Burschka, Keune, Hofstadt-van Oy, Oschmann, & Kuhn, 2014).

Sleep disorders are another common symptom of MS patients which play a very important role in reducing their life quality (Bamer, Johnson, & Amtmann, 2008). More than 50percent of MS patients suffer from sleep problems (Bamer, Johnson, & Amtmann, 2008). There are many reasons for MS patients sleep disorders which potentially is started by immunological and symptomatic treatments, as well as factors associated with multiple sclerosis such as pain (Brass, Duqutte, Proulx, & Tnemen, 2010). According to a conducted study on MS patients, it has been shown that sleep disorders can be an influential index of life quality (Merlino et al., 2009).

Resilience isone of the topics discussed in positive psychology.It has a special place in the fields of developmental psychology, family psychology, and mental health (Garmezy & Masten, 1991). Resilience is defined as anability process or successful adaptation outcome of a threatening situation. In fact, the main psychological symptoms of the disease include extreme euphoria, cognitive changes in concentration and memory, depression, fatigue, stress and extreme anxiety and lack of resilience (Farrell, 2011).

M.S. is a relatively new but prevalent phenomenon in Iran. The specific problems related to this disease, together with its prevalence, specifically in Isfahan, are reasons enough for a serious attention to the patients regarding the treatment, secondary preventions, and life quality improvement for them (Etemadi-Far & Chitsaz, 2005). Because of this, and because of the importance of recognizing and controlling the debilitating problems of this disease, it is significantly important to find ways of rehabilitating the patients and planning based on their potential. In this respect, the researcher intended to apply one course of psychomotor rehabilitation treatment through Dohsa, in order to study its impact on the fatigue level, sleep quality, and resiliency of M.S. patients. If proved successful, this method could be used as a complementary treatment for controlling the problems of these patients.

In recent years, non-pharmacological methods have attracted great attention and are known as complementary therapies. These MS complementary therapies include: acupuncture, hypnotherapy, massage therapy, relaxation, Tai Chi and Yoga (Melz, Amn, & Karoy, 2000). Interventions based psychological rehabilitation is one variety of complementary interventions. In psychological rehabilitation it is believed that the physiological and psychological processes are so interdependent that one cannot be imagined without the other, and the human mind cannot be considered as a single organism separated from the body (Naruse, 1997).

Dohsa-hou is a Japanese psycho-rehabilitation method. It is a holistic method including mental-internal physical activities. It was first studied by Professor Naruse with the aim of improving the motor problems of cerebral palsy children. He believed that psychological activity can influence cerebral palsy disabilities, although such disabilities are resulted from physiological disorders in the first place (Naruse, 1985).

Dohsa is based on three elements: will, effort and motion .Major tasks of Dohsa therapist are reducing the mismatch between the disordered three; will, effort and motion. In fact, when we want to move a part of the body, we'll attempt to perceive the move by our will. If this effort is relative to the movement we will be able to take action. So the mind and the emotions and body position change positively in this way. This technique is also used in counseling and psychotherapy Because of its resulted direct internalized perception that leads a person to talk about herself easily (Naruse, 1992).

Accordingly, Dohsa-hou can be divided into two parts: the psychological part (including effort and will), and the physiological part (including physical activity). The process is designed as a will-effort-physical activity process (Naruse, 1997). In fact, by helping the client to imagine a goal, for example moving one organ, and by helping her-verbally or non-verbally-to modify her moves-she will be more willing to move or to relax (a feeling of effort). As this feeling of effort increases, trying to understand the false moves begins, and physical consciousness (private, public, or physical application) enhances. Movement, then, which is a feeling of changing the moves, appears, and therefore, her mental image of her body changes. In Dohsa-hou, a person controls her activity as the one in charge of her body. This method is applied parallel to other rehabilitation programs such as Vajta. This method also uses Jakobson's gradual relaxation techniques. The distinctive characteristic of Dohsa is being a psycho-treatment tool which is useful for training mind and body, as well as mental health. Therefore, Dohsa is a mental activity with the aim of leading personal effort toward recognizing the motion pattern given to her (Harizoka, 1999).

According to what was said, symptoms of fatigue, sleep problems and lack of resilience in MS patients increase signs and symptoms of the disease even more, so it is necessary to identify factors influencing the disease, and use appropriate strategies to remove or rebate it. As mentioned, these symptoms will decrease MS patients' life quality. Therefore, this study aims at evaluating the effectiveness of Dohsa Psycho-Motor Rehabilitation Method on reducing Fatigue severity, improving sleep quality, and promoting Resilience of Patients with Multiple Sclerosis (MS) in Isfahan, Iran.

In addition, although the technique is used to reduce M.S. symptoms in other countries, it has been neglected in Iran. The researcher intends to find and report any possible cultural reasons (inter-cultural differences) in this

respect.

M.S. is a relatively new but prevalent phenomenon in Iran. The specific problems related to this disease, together with its prevalence, specifically in Isfahan, are reasons enough for a serious attention to the patients regarding the treatment, secondary preventions, and life quality improvement for them (Etemadi Far & Chitsaz, 2005). The importance of this issue is felt more when we notice that it affects mostly the young and the adult, and the disabling nature of the disease overshadows all aspects of a patient's life including physical ability, mental conditions, work and profession, family life, social activities, and generally the quality of life (Adams, 2005).

2. Methodology

To gather the required data, we first referred to Isfahan M.S. center and M.S. clinic in Alzahra Hospital. After studying M.S. cases in these places, we made our research sample. A pre-test was given to individuals in Isfahan M.S. center and M.S. clinic in July, 2014, together with the required explanations on treatment stages. In the pre-test session, the patients were asked to answer three questionnaires (measures of fatigue, sleep quality, and tolerance). Each patient went through 10 treatment sessions and answered post-test questions in another individual session. Follow-up sessions were held in 30 days. Patients were randomly divided into experimental and control groups. The experimental group participated in weakly mental-mobility rehabilitating sessions. Each session was 45 minutes consisting of 15 minute counseling at the beginning for communicational purposes, 25 minutes of Dohsa mental-mobility rehabilitating exercises, and cooling down. An overview of these sessions in presented in the following table.

The present research design is a quasi-experimental one with pre-test, post-test, follow up and the control group. This project was designed to evaluate the effectiveness of Dohsa Psycho-Motor Rehabilitation Method on reducing Fatigue severity, improving sleep quality, and promoting Resilience of Patients with Multiple Sclerosis who are recorded in clinic and Ms Society in 1392-93 (MS) in Isfahan.

In this study, first of all by using purposive sampling method 30 MS patients were selected from among all the patients who came to Al-Zahra hospital MS center and were primary diagnosed to have multiple sclerosis disorder. They had the highest score in a scale of fatigue, sleep quality and resiliency. Participants were randomly assigned to experimental and control groups. After sampling in a preliminary session they were informed about the nature of the research. Then after completing consent form, patients were enrolled in the study and placed randomly in experimental group (n=15) and control (15) group. Finally, after the intervention sessions the number of people in the experimental group compared to control group was15 to 13. After passing 10 sessions, each participant answered post-test questions personally. Follow up sessions were hold with 30 days interval. Control group also received 4 sessions treatment after data analysis with spss-18 software and after administrating the post-test and follow-up.Allthe participants of the study were assured that their information will remain confidential. Participants inclusion criteria in this study included: being recorded in MS society and Al-Zahra hospital, confirmation of disease diagnose by aneurologist, having MS diagnose criteria according to the McDonald criteria (2005), being stage range of 25 to 40, having no severe occurrence and recurrence of the disease and ability to communicate and cooperate. The study exclusion criteria included: having intense periods of invasion and recurrence, having other chronic disorders, lacking motivation and informed consent to perform the procedures and having the more than 3 times absence.

2.1 Research Instruments

Data collection instruments were Krupp, LaRocca, Muir-Nash &Steinberg's fatigue severity scale (FSS) questionnaire (1989), Pittsburgh sleep quality questionnaire (PSQI) (1989) and Resilience Scale questionnaire (CD-RISC) Kanr-Davidson (2003).

2.2 Fatigue Severity Scale (FSS)

This questionnaire consisted of 9 questions which are graded from zero (no fatigue) to 7 (very tired) on a visual graph. Low scores indicate patients' disagreement while high scores show their agreement. Based on conducted research patients who score 36 or higher suffer severe fatigue and those with lower than suffer a mild chronic fatigue (Krupp, LaRocca, Muir-Nash, & Steinberg, 1989). The fatigue scale Persian version reliability for multiple sclerosis was provided by Shahvarouqy, Farahani, Azimian, Flahpour and Karimloo (1388). The internal consistency of their Fatigue Severity Scale items equaled 0/96 using Alpha Cronbach index demonstrating the fact that scale items assess one concept. The obtained reliability coefficient of the study using Cronbach's alpha equals 0.75.

2.3 Pittsburgh Sleep Quality Index (PSQI)

This scale assesses seven factors; sleep mental quality, delays in falling asleep, sleep duration, good sleep, sleep disorders, using hypnotic drugs, and daytime function impairment and contains 18 items. Participants choose a range of responses from no (zero), less than once per week (1), one or twice a week (2) and three or more times during the week. Total score higher than 5 indicate poor sleep quality. Bayci et al's (1989) reliability equaled 83, questionnaire Cronbach's alpha reliability coefficient equaled 82.Afkhamzadeh,Ebrahimi, Qalebandy, Salehi, Kafian, Tafti, vakili et al. (1387) reported 79% reliability.

2.4 Connor-Davidson Resilience Scale (CD-RISC)

This scale consists of 25 questions and Connor-Davidson (2003) prepared it to measure the ability to insist pressure. Although this scale measures different dimensions of resiliency, it has a total score. Cronbach's alpha coefficient of the questionnaire has been reported 86/0. The scale is normalized by Muhammadi (2005). To determine the validity of this scale first the correlation of each item was compared to the scale's total score, then a factor analysis method was used. Calculating the correlation between each score and total score showed the coefficients between 41 percent and 64 percent, except for item 3. Then the scale items were factor analyzed using principal component method. KMO amount equaled to 87 percent and the Bartlett's test chi-square equaled5556/28.Both indicators have shown sufficient evidence for factor analysis. The Cronbach's alpha for this scale was 89/0.Descriptive statistics (mean and standard deviation) and inferential statistics (analysis of covariance) were used to analyze data. Obtained data were analyzed by SPSS 18 software.

3. Results

The average age of the participants in the experimental group was 30.54, standard deviation equaled 4.09 and the average age of the participants in the control group was32.53 and standard deviation was 4.70. The frequency of single people in the experimental and control groupswas 3.The frequency of married people in the experimental and control groups were 10 and 12 relatively. Also according to the results of Levin, Kolmogorov and Smirnov test about the equality of variances and scores normal distribution presupposition, zero assumption is confirmed for two groups' scores normal distribution in research variables. It means scores normal distribution presupposition was confirmed in two groups pretest. Zero assumption for the equality of main variables scores variances in both pretest and posttest was also confirmed.

Table 1. Mean and standard deviation of fatigue severity, sleep quality and resiliency in research groups based on the test stages

Statistics	Group	Number	Pre-Test		Post-Test		Follow-Up	
			Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Fatigue Severity	Experimental	13	35.38	6.05	32.31	6.13	33.77	6.39
	Control	15	32.73	6.06	32.80	6.20	33	6.13
Sleep Quality	Experimental	13	16.69	9.14	15.15	9.08	15.31	8.65
	Control	15	14.33	4.49	14.20	4.88	14.33	4.87
Resiliency	Experimental	13	39.85	9.21	41.92	9.34	41.61	9.31
	Control	15	41.27	8.61	41.40	8.44	41.33	8.46

As it is seen in Table 1, mean fatigue for the experimental group, respectively equals 35.38, 32.31 and 33.77 and for the control group pre-test and post-test and follow-up respectively equals 32.73, 32.80 and 33. Resilience mean for the experimental group in pre-test, post-test and follow-up respectively equals 39.85, 41.92 and 41.61 and for the control group it respectively equals 41.27, 41.40 and 41.33. Sleep quality mean for the experimental group in the pre-test, post-test and follow-up respectively equals 16.69, 15.15 and in the control group respectively equals 14.33, 15.31, 14.20 and 14.33.

Table 2. Covariance scores analysis results of fatigue severity sleep quality and resilience in the posttest and follow-up

Variable	Phase	Variables	Total Squares	Degree Of Freedom	Mean Squares	F	Significant	Effects	Statistical Power
Fatigue Severity	Post Test	Pre-Test	945.31	1	945.31	935.12	0.001	0.98	99/0
		Group Membership	62.71	1	62.71	62.03	0.001	75/0	0.99
	Follow Up	Pre-Test	962.43	1	962.43	627.87	0.001	0.97	99/0
		Group Membership	23.15	1	23.14	15.09	0.001	42/0	0.96
Sleep Quality	Post Test	Pre-Test	1079.58	1	1079.58	162.3	0.001	0.98	0.99
		Group Membership	11.26	1	11.26	16.93	0.001	0.44	0.97
	Follow Up	Pre-Test	982.62	1	982.62	1300	0.001	0.98	0.99
		Group Membership	9.61	1	9.61	12.72	0.002	0.38	0.92
Resilience	Post Test	Pre-Test	1832.71	1	1832.71	2666	0.001	0.99	0.99
		Group Membership	23.01	1	23.01	33.47	0.001	0.61	0.99
	Follow Up	Pre-Test	1818.89	1	1818.89	1012	0.001	0.98	0.99
		Group Membership	18.86	1	18.86	10.49	0.004	0.33	0.87

As is shown in Table 1 to 2, after removing the effect of synchronous variables on the dependent variable and by considering the computed F ratio, it was observed that there is a significant difference ($p \leq 0.01$) between the adjusted mean scores of fatigue severity, sleep quality and resilience of participants in terms of group membership (experimental group and control group) in the post-test and follow-up phase. Therefore, the research hypothesis that Dohsa Psycho-Motor Rehabilitation Method treatment influence on fatigue severity, and resilience of patients with Multiple Sclerosis (MS)in post-test and follow-up stage is approved.

4. Discussion

This study showed that there was a significant difference between the experimental group and control group in post-test and follow-up stage after the intervention. Assumption covariance analysis showed that after removing the effects of control variables, the mean of fatigue severity remaining scores of the patients with multiple sclerosis who received Dohsa Psycho-Motor Rehabilitation Method treatment was significantly less than the mean of fatigue severity remaining scores in the control group. Due to the high level of effectiveness, it can be concluded that Dohsa Psycho-Motor Rehabilitation Method treatment has reduced fatigue severity in multiple sclerosis patients significantly. The results of this research are in accordance with Karbandy, Aghaei, Mazlom, Nourian and Soltani (2010) research on using motion relaxing exercises to reduce fatigue severity. Auken, Kyshengma, Zajyl (2004) conducted a quasi-experimental research in Oregon to investigate the effects of yoga and aerobic exercises on cognitive function, fatigue, mood and life quality in multiple sclerosis patients. They concluded that those in the experimental group experienced lower fatigue than the control group members. In explaining the obtained results, it can be said that although fatigue physiological mechanism is still unknown but studies show that the more still the person be the less energy she will have for physical activities this in turn causes muscle mass loss and function reduction and consequently increase physical and mental fatigue.

This way Dohsa Psycho-Motor Rehabilitation Method treatment creates a significant change in the patients' energy level by activating cognitive factor and movement process. Considering the fact that results show a relationship between fatigue and negative mood, Dohsa Psycho-Motor Rehabilitation Method treatment can reduce fatigue by motivating and creating a dynamic process of effort. Consistent with the Naruse (1997) explanation it can be proposed that Dohsa techniques increase muscle mass which in turn courage them to do more body exercises and as a result decrease their reluctance which consequently reduce physical and mental fatigue.

Also, assumption covariance analysis showed that after removing control variables' effect the mean of sleep quality remaining scores in patients with multiple sclerosis who used Dohsa psychomotor rehabilitation

intervention was significantly higher than the mean of Sleep quality remaining scores for control group. Therefore, it can be concluded that Dohsa Psycho-Motor Rehabilitation Method treatment significantly promoted patients' sleep quality. It can be explained according to Dohsa treatment efficacy in reducing anxiety and stress levels (Younaka, 2003) in the way that participants of the present study after receiving Dohsa treatment which affects their stress and anxiety experience a better quality sleep. It should be noted that stress and anxiety is one of the main reasons of not having enough sleep. Unpredictable attacks causes MS patients to feel that they have no control over their condition and Physical disabilities cause them to feel vulnerable. It is natural that such a condition and feeling brings anxiety to the patient. Disease Unpredictability causes movement failure and function disability which in turn increases anxiety. In Dohsa Psycho-Motor Rehabilitation Method treatment, techniques are presented from the simplest to the most complex ones and let the patients to choose the most appropriate techniques which are more compatible to her own condition at the end of the treatment. Motion techniques, relaxation, and diaphragmatic breathing will help the patient to gain a sense of relaxation by which she can fight off the arousal feeling of anxiety. Making patients mind busy by asking them to pay attention to the exercises and trying to copy techniques let patients to send away stressful thoughts.

In fact Psycho-Motor Rehabilitation treatment like Dohsa can reduce hormones associated with stress and anxiety and affect patients' brain activity positively. By considering the obtained result it was observed that Dohsa Psycho-Motor Rehabilitation Method treatment increases the resiliency of multiple sclerosis patients in experimental group compared to the control group. Assumption covariance analysis showed that after removing control variables effects, the mean of residual resilience remaining scores in patients with multiple sclerosis who received Dohsa Psycho-Motor Rehabilitation Method intervention was significantly higher than the mean of remained resilient remaining scores in group control. Due to the high level of effectiveness, it can be concluded that Dohsa Psycho-Motor Rehabilitation Method treatment has significantly increased resiliency of multiple sclerosis patients. Results of this research are consistent with Masoudi et al. (1390) as well as Shaterland, Anderson and Morris (2005). For above findings clarification it can be said that when people are faced with situations and environmental demands, they assess their coping resources; if they perceive these resources to be inadequate and useless they will feel stressed which in turn causes intolerance.

5. Conclusion

It can be argued that perhaps Dohsa Psycho-Motor Rehabilitation Method help MS patients to identify anxiety in various parts of their body and fight them off by doing body movements and relaxation. In fact, patients learn how to encounter their previously uncontrollable anxiety with a problem-oriented approach using Dohsa techniques. Although patients cannot fully control their stress by these techniques, they can reduce harmful stress, prevent disease progression and increase their efficacy. Dohsa treatment also helps these patients to distinguish between states of anxiety and relaxation by which they can learn how to calm themselves in stressful situations. By providing proper motor patterns Dohsa makes them do body exercises and on the other hand increases blood flow to the brain and consequently reduces anxiety. On the other hand Dohsa exercises help MS patients to find stress source in their body by activating motor factor. In fact, this technique works on the parts of the body (shoulders, back) that are more stressed and this can be used as a guide for patients. Dohsa techniques reduce the amount of adrenaline and remove stress by muscle contraction and deep breathing.

In general, Dohsa treatment can play an important role in reducing fatigue, improving sleep quality and resilience by using motion exercises and relaxation process. Study limitations include gender inequality which causes problem in generalization to both sexes. Therefore, it is suggested that future studies be performed in other MS Society centers. It is also suggested to carry out future studies in longer follow-up period of time to ensure the effectiveness. Considering the fact that Dohsa Psycho-Motor Rehabilitation Method treatment was done for MS patients, it is suggested to apply it to other chronic diseases such as cancer and diabetes. Considering the effectiveness of Dohsa Psycho-Motor Rehabilitation Method treatment on mood states and life quality, this medical method is suggested to all medical and rehabilitation centers.

Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

Adams, V. (2005). *Principle of Neurology* (7th ed.). USA. NY. Mac Grow Hill Publishing.

Bamer, A. M., Johnson, K. L., Amtmann, D., & Kraft, G. H. (2008). Prevalence of sleep problems in individuals with multiple sclerosis. *Multiple Sclerosis (Hound mills, Basingstoke, England), 14*(8), 1127-30. http://dx.doi.org/10.1177/1352458508092807

Brass, S. D., & Duquette, P. (2010). Proulx-Therrien J, Auerbach S. Sleep disorders in patients with multiple sclerosis. *Sleep Medicine Reviews, 14*(2), 121-9. http://dx.doi.org/10.1016/j.smrv.2009.07.005

Burschka, M., Keune, P. M., Hofstadt-van Oy, U., Oschmann, P., & Kuhn, P. (2014). Mindfulness-based interventions in multiple sclerosis: Beneficial effects of Tai Chi on balance, coordination, fatigue and depression. *BMC Neurology, 14*, 165. http://dx.doi.org/10.1186/s12883-014-0165-4

Etemadi-Far, M., & Chitsaz, A. (2005). *Multiple Sclerosis*. Isfahan: Chaharbagh.

Etemadi-Far, M., & Chitsaz, F. (2002). *Multiple Sclerosis*. Isfahan: Chaharbagh.

Farrell, P. (2011). *Anxiety, Depression, Mood swings, and multiple scleroses.* Demos Medical Publishing.

Garmezy, N., & Masten, A. (1991). *The protective role of competence indicators in children at Risk*. Ine. M. Cammings.

Harizuka, S. (1999). Dohsa-hou for making a sitting posture with legs crossed. *The Journal of Rehabilitation Psychology, 19*, 27-33.

Lerdal, A., GulowsenCelius, E., & Krupp, L. A. (2007). Prospective study pf patterns of fatigue in multiple sclerosis. *Eur J Neurol, 14*, 1338-43. http://dx.doi.org/10.1111/j.1468-1331.2007.01974.x

Merlino, G., Fratticci, L., Lenchig, C., Valente, M., Cargnelutti, D., & Picello, M. (2009). Prevalence of 'poor sleep' among patients with multiple sclerosis: An independent predictor of mental and physical status. *Sleep Medicine, 10*(1), 26-34. http://dx.doi.org/10.1016/j.sleep.2007.11.004

Mills, N. J., Allen, S., & Carey, M. (2000). Does Tai Chi help patients with Multiple Sclerosis GorgQi? *Journal Of Body Work and Movement Therapies, 4*(11), 39-48. http://dx.doi.org/10.1054/jbmt.1999.0139

Morrow, S., Rosehart, H., & Johnson, A. (2015). *Quantification of Cognitive Fatigue in Multiple Sclerosis Diagnosis and, Cognitive and Behavioral Neurology, 28*(1), 27-32. http://dx.doi.org/10.1097/WNN.0000000000000050

Naruse, G. (1985). *Theatrical approach to Dohsa-hou training* (Vol. 2, No. 4, pp. 73-81). Tokyo: Seishinshobo.

Naruse, G. (1992). Recent development of Dohsa-hou in Japan. *Journal of Rehabilitation Psychology, 19*(3), 7-11.

Naruse, G. (1997). *The clinical Dohsa-hou as Psycho-therapy* (Vol. 3, pp. 1-10). Clinicaldohsalog.

Patani, R., Balaratnam, M., & Vora, A. (2007). Remyelination in multiple sclerosis despite a long disease course can be extensive. *Neuropatholapplneurobiol, 33*, 277-287. http://dx.doi.org/10.1111/j.1365-2990.2007.00805.x