Rahman Institute of Higher Education

Journal of Modern Psychology

Impact of Pilates Training on the Levels of Depression and Self-Esteem in School Teachers

Mohammadbagher Askarnia (Corresponding Author)

Ph.D in Sports Management, Department of Physical Education, Tabriz Branch, Islamic Azad University, Tabriz, Iran
mohammadbager.askarnia@gmail.com

Simin Elmi
M. A. in Psychology, Ardabil Branch, Islamic Azad University, Ardebil, Iran. simiin.elmii2024@gmail.com, +989104416293, ORCID: 0009-0007-6390-3089

Hassan Shafaei

Department of Physical Rehabilitation, massage and health-improving physical culture, Moscow, Russia

ORCID: 0000-0001-5802-3385, hassanshafai37@yahoo.com

Email: hassanshafai37@yahoo.com

Tina Soltanahmadi
Ph.D in Sports Management, Department of Physical Education, Urmia Branch, Islamic Azad University, Urmia, Iran
tinasoltanahmadi2020@gmail.com

Abstract

Background: It is crucial to prioritize the enhancement of teachers' mental health within the education system. As a result, this study aims to examine the impact of a Pilates training course on the psychological and mental well-being of school teachers, encompassing aspects such as depression and self-esteem.

Methods: The research was carried out using a semi-experimental approach. The study involved 60 elementary school teachers who were chosen through convenience sampling and then randomly and equally divided into two groups - experimental and control. Data was collected using standard questionnaires. T tests and ANCOVA were used to analyze data.

Results: The results showed that there is no significant difference in both depression and self-esteem in the pretest (both $P>0.05$). However, it was observed that experimental group had significantly lower depression and higher self-esteem compared to control group in the posttest (both $P=0.001$). Finally, the results of ANCOVA showed significant differences between experimental and control groups in both depression and self-esteem (both $P=0.001$).

Conclusions: These findings indicate that it is possible to recommend Pilates exercise and movement activities as a way to improve mental health, self-esteem, satisfaction with life, efficiency, positive mood and reduce mental and emotional tensions in school teachers.

Keywords: Pilates, Sport, Depression, Self-esteem, Teacher

Introduction

Stress and psychological pressure in today's society have impacted various facets of human life, including work, social interactions, and family dynamics. The intricate system we live in constantly exposes individuals to stressful stimuli, leading to tension in the nervous-muscular systems and ultimately contributing to mental pressure (Chaharbaghi, et al. 2022; Afsanepurak, et al. 2012; Dana & Shams, 2019; Dana, et al. 2011, 2019, 2021). Given the significance of physical health and well-being, any fluctuations in this area can significantly influence not only psychological well-being but also other aspects of human life. Depression is a significant psychological disorder that has garnered the attention of numerous researchers in the field of mental health. It has become one of the most prevalent mental illnesses affecting individuals worldwide (Letvak, Ruhm, & Mccoy, 2012; Mikkelsen, et al. 2017; Newhan, et al. 2014; Ohler, et al. 2010). Characterized by prolonged duration and specific symptoms, depression can severely impact an individual's functioning and overall well-being. Particularly prevalent among the elderly, depression is a major risk factor for suicide in this age group. The World Health Organization has identified depression as the fourth leading cause of disability globally, with projections indicating it will rise to the second position by 2020. Mental health professionals have recognized depression as the most prevalent and fundamental mental health issue over the past two decades. Studies show that approximately 15% of adults aged 15 to 74 exhibit significant symptoms of depression. While medication remains a common treatment approach for depression, it may not fully address the needs of all individuals. Physical activity and exercise have emerged as one of the most important, simplest, and cost-effective strategies, particularly for promoting mental well-being among the general population (Farsi et al. 2016; Ghorbani & Bund, 2014, 2017; Ghorbani, et al. 2020; Khosravi et al. 2023; Moradi, et al. 2020; Sadeghipor & Aghdam, 2021).

Sports activities offer numerous physical, psychological, and social advantages. Engaging in regular physical exercise can lower the chances of heart disease-related deaths, reduce the risk factors associated with colon cancer, type 2 diabetes, and high blood pressure, enhance glucose metabolism, decrease obesity, and boost antioxidant levels. Professionals argue that by encouraging individuals to participate in physical activities, a society can effectively enhance the self-esteem, physical well-being, and mental health of its citizens (Sadeghipor, Aghdam, & Kabiri, 2021; Sadeghipor, Kabiri & Aghdam, 2021; Seyedi-Asl, et al. 2021; Seyedi-Asl, et al. 2016; Taghva, et al. 2020). Extensive studies conducted on both men and women have revealed that physically active individuals exhibit fewer symptoms of anxiety and depression in comparison to their sedentary counterparts.

Pilates is a renowned form of mental-physical exercise that emphasizes movement control, body posture, and breathing. It aims to achieve perfect harmony between body, mind, and spirit. Through purposeful control, individuals gain mastery over their bodies and gradually develop natural coordination through consistent repetition of movements. This method enhances coordination, corrects improper body postures and movements, revitalizes the body, and boosts mental strength (Faircloth, 2017; American Psychological Association, 2014; Davidson, 2003;

Jolivet, et al. 2010). Originally created by Joseph Pilates post-World War I, Pilates was designed as a unique physical fitness regimen by doctors. It combines muscle strengthening, stretching, and breathing techniques to strengthen core muscles and restore muscle balance. Unlike traditional resistance training, Pilates takes a holistic approach, engaging multiple muscle groups simultaneously. The versatility and effectiveness of Pilates have made it a popular supplemental exercise for people of all ages and genders, from professional athletes to pregnant women, who can even practice it in the comfort of their own homes (Sadeghpour & Sangchini, 2020; Taso, et al. 2014; Bandura, 1997; Conner & Davidson, 2003; Hartfiel, et al. 2011; Herrick, et al. 2020; Chris, et al. 2010).

The field of education is currently facing a significant challenge in terms of the decline in teachers' energy and workforce. This issue not only hampers the efficiency and effectiveness of teachers but also leads some of them to leave the education system prematurely. This phenomenon is commonly referred to as job burnout, which adversely affects individuals. Moreover, the factors contributing to job burnout can also have a detrimental impact on a teacher's physical health, influencing their thoughts, emotions, and overall mental well-being. Consequently, it is crucial to prioritize the enhancement of teachers' mental health within the education system. As a result, this study aims to examine the impact of a Pilates training course on the psychological and mental well-being of school teachers, encompassing aspects such as depression and self-esteem.

Methods

The research was carried out using a semi-experimental approach. The study involved 60 elementary school teachers who were chosen through convenience sampling and then randomly and equally divided into two groups - experimental and control. In order to participate in the study, the teachers had to meet certain criteria: 1) being an elementary school teacher, 2) not having any physical disabilities, and 3) giving written consent to take part in the research. Exclusion criteria consisted of: 1) not completing the Pilates exercise form, 2) not completing the research questionnaires, and 3) not providing written consent.

The measurement of the participants' depression was conducted using the BDI-13 (Letvak, Ruhm, & Mccoy, 2012), which is a short 13-question Beck Depression Questionnaire. To make it more accessible for general use, Beck created a concise and straightforward self-assessment form. This questionnaire consists of 13 questions, with each category being graded on a scale of 0 to 3. The highest possible score on the scale is 39, and the test materials within each category are arranged in descending order based on the severity of depression. In this study, the Cronbach's was for this scale was obtained to be 0.88.

In this study, teachers' self-esteem was assessed using Rosenberg's self-esteem scale (Connor & Davidson, 2003). This questionnaire comprises 10 items that participants must respond to using a four-point Likert scale ranging from completely agree to completely disagree. Scores on this scale range from 10 to 40, with higher scores indicating higher levels of self-esteem. Half of the items

(1 to 5) are phrased positively, while the other half (6 to 10) are phrased negatively. Scoring is as follows: for items 1 to 5, completely disagree = 0, disagree = 1, agree = 2, and completely agree = 3. For items 6 to 10, completely agree = 0, agree = 1, disagree = 2, and completely disagree = 3. In this study, the Cronbach's was for this scale was obtained to be 0.94.

The study utilized a pretest-posttest research design with a control group. The participants in the experimental group underwent an 8-week Pilates training course, consisting of three one-hour sessions per week, at the sports department of the medical center. The training sessions were divided into two parts. The first part involved exercises performed on a mat, which were conducted during the initial four weeks. The second part involved exercises using bandages and cloths to support and assist the muscles and joints, and these exercises were carried out during the subsequent four weeks.

The research employed descriptive statistics such as mean, standard deviation, and frequency percentage to depict the variables under investigation. Additionally, the Kolmogorov-Smirnov test was utilized to assess the normality of the data distribution. T tests were used for comparing pretest and posttest among groups. Finally, to assess the efficacy of Pilates exercises, covariance analysis was conducted using SPSS version 26 software. The significance level for all analyses was set at $P \geq 0.05$.

Results

Table 1 presents the mean and dispersion of individual characteristics of the subjects, including age, height, weight, and body mass index (BMI).

Table 1. Demographic features of the participants

Indicator	Group	No.	mean±SD	P
Age (year)	Control	30	35.68±3.07	0.68
	Training	30	34.18±5.84	
Height (M)	Control	30	1.70±0.05	0.93
	Training	30	1.69±0.04	
Weight (Kg)	Control	30	72.06 ±3.79	0.81
	Training	30	71.95±2.73	
Body mass index (Kg/M^2)	Control	30	24.20±1.18	0.87
	Training	30	24.31±1.58	

First of all, the results of Kolmogorov-Smirnov tests showed that all research variables had normal distribution (all $P>0.05$). The results of the paired-sample t-test (Table 2) revealed a notable influence of the Pilates training on depression ($P=0.001$) and self-esteem ($P=0.001$) among the individuals in the training group from the initial assessment to the final assessment. Conversely, there were no significant differences in the impact observed between the pre- and post-tests in the control group for both depression and self-esteem ($P<0.05$).

Table 2. Paired-sample t test results for intra-group comparison of depression and self-esteem

	Control Group				Training Group			
	Pretest	Posttest	t	P	Pretest	Posttest	t	P
Depression	26.62±5.09	27.58±6.94	0.090	0.89	25.47±6.37	17.93±5.88	12.08	0.001
Self-esteem	21.51±5.15	20.41±4.66	0.147	0.59	19.71±6.22	25.71±4.77	15.96	0.001

Table 3 presents the findings of the covariance test analysis conducted to compare the two groups. According to Table 3 and the level of significance is 0.001, which is less than 0.05, there is a significant difference between the estimated mean depression scores of experimental and control subjects, and the amount of difference indicates that 70.68% of the variance of the post-test scores is due to the effect of Pilates training on depression. Therefore, Pilates training is effective on the depression of the school teachers, and according to the averages, it has reduced the amount of depression.

Table 3. Analysis of covariance test outcomes for inter-group evaluation of depression

	Sum of squares	df	Mean of squares	F	P	Eta squared
Pretest	4018.694	1	4018.694	12.248	0.001	13.05
Group	35174.024	1	35174.024	140.05	0.001	48.69
Error	2958.449	57	128.63.616			

Table 4 presents the findings of the covariance test analysis conducted to compare the two groups. According to Table 4 and the level of significance is 0.001, which is less than 0.05, there is a significant difference between the estimated mean self-esteem scores of experimental and control subjects, and the amount of difference indicates that 71.04% of the variance of the post-test scores is due to the effect of Pilates training on self-esteem. Therefore, Pilates training is effective on the self-esteem of the school teachers, and according to the averages, it has increased the amount of self-esteem.

Table 4. Analysis of covariance test outcomes for inter-group evaluation of self-esteem

	Sum of squares	df	Mean of squares	F	P	Eta squared
Pretest	4254.369	1	4254.369	8.96	0.001	3.84
Group	52041.364	1	52041.364	98.96	0.001	68.97
Error	3025.029	57	89.649			

The Independent t test results (Table 5) indicated a significant difference in the post-test results between the control and training groups (P=0.001). More precisely, the training group exhibited a significant improvement in depression and self-esteem in comparison to the control group.

Table 5. Results of Independent t test to investigate the difference inter-groups in depression and self-esteem

	Test stage	t	P
Depression	Posttest	10.47	0.001
Self-esteem	Posttest	18.64	0.001

Discussion

The purpose of the present study was to investigate the effect of 8 weeks of Pilates exercise on depression in school teachers. The results of the present study showed that the symptoms and signs of depression in the studied population improved after a period of selected Pilates exercises compared to the control group. It seems that the effect of Pilates exercises on improving physical performance, balance, strength and flexibility somehow improves health in physical, social, psychological and environmental dimensions and also reduces depression (Masten, 2001; Sadeghipor & Aghdam, 2021). The effect of Pilates exercise in reducing depression and improving mental health can be attributed to the role of serotonin. Because the imbalance in serotonin levels may affect the mood in a way that leads to depression and affects the functioning of the gastrointestinal and mental organs related to the quality of life (Davidson, 2003; Jolivet, et al. 2010). One of the strategies that increase serotonin is exercise, which naturally increases the level of alertness and general mood of the individual, and gives people a feeling of more energy and vitality to carry out daily life tasks.

This improvement can be attributed to the effects of exercise on cognitive function. Because exercising leads to a change in the transcription level of a number of genes known to be related to neuronal activity, synaptic structure and the production of neurotransmitters, which are important in the process of memory processing and reducing depression. On the other hand, regular physical activity, as a necessity for a healthy lifestyle, affects the central nervous system and the adjustment of hippocampus, which plays a significant role in learning and memory. Exercise directly affects the structure and function of the brain (Sadeghipor & Aghdam, 2021; Sadeghipor, Aghdam, & Kabiri, 2021). Increasing breathing capacity in Pilates exercises leads to strengthening cerebral blood flow, improving the use of oxygen, increasing the activity of blood antioxidant enzymes (glutathione peroxidase - and glucose in the brain, speeding up the transfer of biochemical substances and PX-GSH), for quick elimination Radicals are released and lead to improvement of mood and reduction of depression (Sadeghipor, Kabiri & Aghdam, 2021; Seyedi-Asl, et al. 2021; Seyedi-Asl, et al. 2016; Taghva, et al. 2020). Also, it has been reported that physical activity and exercise can affect neural support processes and brain flexibility and have a positive effect on cognition and behavior, and the above arguments play an important role in improving the depression process (Khosravi et al. 2023; Moradi, et al. 2020).

The Pilates training method consists of exercises that have a beneficial effect on breathing, flexibility, relaxation, memory, learning strength and endurance and is well designed to increase physical and mental health. The findings show that Pilates exercise may be a useful tool to help school teachers improve their self-esteem (Bandura, 1997; Conner & Davidson, 2003; Hartfiel, et al. 2011; Herrick, et al. 2020). On the other hand, Pilates is a low-cost, low-risk and non-invasive sport, and it is based on very controlled and relaxed movements. Therefore, it seems that with the help of this sport, it is possible to reduce the negative consequences of life and the subsequent treatment costs, and to pave the way for improving the quality of life and mental health (Dana, et al. 2021; Ghorbani & Bund, 2014).

Conclusion

In summary, it can be concluded that exercise and physical activities have a significant effect in reducing depression disorders, improving mental health and self-esteem of school teachers. Therefore, it is possible to recommend Pilates exercise and movement activities as a way to improve mental health, self-esteem, satisfaction with life, efficiency, positive mood and reduce mental and emotional tensions in school teachers. Although 8 weeks of Pilates training was effective in improving the depression of the school teachers, it is suggested that doing exercises with a different duration, type of exercise protocol and in other groups will bring a clearer answer about the extent of these effects on the well-being of the school teachers. The results of this research can be useful for experts in sports psychology, movement behavior, occupational therapy, exercise physiologists, as well as planners in the field of school system.

References

Afsanepurak, S. A., Bahram, A., Dana, A., & Abdi. J. (2012). The effect of self-talk and mental imagery on self-efficacy in throwing darts in adolescents. *International Research Journal of Applied & Basic Sciences*, *3*(3), 594-600. https://ssrn.com/abstract=3947464.

American Psychological Association. (2014). *The Road to Resilience*. Washington, Dc: American Psychological Association.

Bandura, A. (1997). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191–215.

Chaharbaghi, Z., Baniasadi, T., & Ghorbani, S. (2022). Effects of Teacher's Teaching Style in Physical Education on Moderate-to-Vigorous Physical Activity of High-School Students: An Accelerometer-based Study. *International Journal of School Health*, *9*(3), 143-150. doi: 10.30476/intjsh.2022.95204.1224.

Chris, C., et al. (2010). Effects of yoga versus walking on mood, anxiety, and brain levels: A randomized controlled MRS study. *The Journal of Alternative and Complementary Medicine*, *16*(11), 1145-1152.

Conner, K. M., & Davidson, J. R. T. (2003). Development of a new Resilience scale: The Conner – Davidson Resilience Scale (CD-RISC). *Depression & Anxiety*, *18*, 76-82.

Dana, A., & Shams, A. (2019). The efficacy of brain cognitive rehabilitation interventions on executive functions in children with attention deficit hyperactivity disorder. *Neuropsychology*, *5*(18), 131-140. doi: 10.30473/clpsy.2020.46249.1440.

Dana, A., Rafiee, S., & Gholami, A. (2019). Motor reaction time and accuracy in patients with multiple sclerosis: effects of an active computerized training program. *Neurological Sciences*, *40*(9), 1849-1854. doi: 10.1007/s10072-019-03892-6.

Dana, A., Habibi, Z., Hashemi, M., & Asghari, A. (2011). A description and comparison of anthropometrical and physical fitness characteristics in urban and rural 7-11 years old boys and girls in Golestan Province, Iran. *Middle East Journal of Science & Research*, *8*(1), 231- 236. doi: 10.2139/ssrn.3947479.

Dana, A., Ranjbari, S., Salehian, M. H., & Shayan Matin, P. (2021). Effects of Cognitive-Behavioral Therapy on Mental Health of High-School Students during COVID-19 Pandemic. *International Journal of School Health*, *8*(4), 201-208. doi: 10.30476/intjsh.2021.92100.1165.

Davidson, C. (2003). Development of a new resilience scale: The Connor Davidson resilience scale (CD-RISC). Journal of Depression and anxiety, 18, 76-82.

Ellis, N., Randall, J., & Punnett, G. (2013). The effects of a single bout of exercise on mood and self-esteem in clinically diagnosed mental health patients. *Open Journal of Medical Psychology*, *2*(3), 81-85. hdoi: 10.4236/ojmp.2013.23013.

Faircloth, A. L. (2017). Resilience as a mediator of the relationship between negative life events and psychological well-being. *Electronic Theses & Dissertations*, 1373.

Farsi, A., Bahmanbegloo, Z. H., Abdoli, B., & Ghorbani, S. (2016). The effect of observational practice by a point-light model on learning a novel motor skill. *Perceptual & Motor Skills*, *123*(2), 477– 488. doi: 10.1177/0031512516662896.

Ghorbani, S., & Bund, A. (2017). Throwing skills: Analysis of movement phases in early motor learning. *Perceptual & Motor Skills*, *124*(2): 502-513. doi: 10.1177/00315125176899.

Ghorbani, S., & Bund, A. (2014). Acquisition a baseball-pitch through observation: What information is extracted? *American Journal of Sports Science & Medicine*, *2*(6A), 18-21. doi:10.12691/ajssm-2-6A-5.

Ghorbani, S., Ghanati, P., Dana, A., & Salehian, M. H. (2020). The effects of autonomy support on observational motor learning. *Iranian Journal of Learning and Memory*, *3*(11), 77-87. doi: 10.22034/iepa.2021.242953.1195.

Hartfiel, N., Havenhand, J., Khalsa, S., Clarke, G., & Krayer, A. (2011). The effectiveness of Yoga for the improvement of well-being and resilience to stress in the workplace. *Scandinavian Journal of Work, Environment & Health*, *37*(1): 70-76. doi: 10.5271/sjweh.2916.

Herrick, C., & Ainsworth, A. (2003). Invest in yourself: Yoga as a self-care strategy. *Nurs-Forum*, *35*(2), 32-36.

Jolivet, A., Caroly, S., Ehlinger, V., Kelly Irving, M., Delpierre, C., & Balducci, F. (2010). Linking hospital workers' organisational work environment to depressive symptoms: A mediating effect of effort–reward imbalance? The Orsosa study. *Social Science & Medicine*, *71*(3), 534-540. doi: 10.1016/j.socscimed.2010.04.003.

Khosravi, M., et al. (2023). Parenting styles, maladaptive coping styles, and disturbed eating attitudes and behaviors: a multiple mediation analysis in patients with feeding and eating disorders. *PeerJ*, *11*, e14880. doi: 10.7717/peerj.14880.

Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., & Wei, N. (2020). Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. *Jama Network Open*, *3*(3), E203976-E. doi: 10.1001%2Fjamanetworkopen.2020.3976.

Letvak, S., Ruhm, C., & Mccoy, T. (2012). Depression in hospital-employed nurses. *Clinical Nurse Specialist*, *26*(3), 177-182. doi: 10.1097/nur.0b013e3182503ef0.

Masten, A. (2001). Ordinary Magic: Resilience Processes in Development. *American Psychologist*, *56*(3), 227-38. doi: 10.1196/annals.1376.003.

Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *National Library of Medicine*, *106*, 48-56. doi: 10.1016/j.maturitas.2017.09.003.

Moradi, J., Bahrami, A., & Dana, A. (2020). Motivation for participation in sports based on athletes in team and individual sports. *Physical Culture and Sport, Studies & Research*, *85*(1), 14–21. doi: 10.2478/pcssr-2020-0002.

Newhan, J. J., Clin, A. W., Hurley, J., Aplin, J. D., & Westwood, M. (2014), Effects of antenatal yoga on maternal anxiety and depression: A randomized controlled trial. *The Official Journal of ADAA*, *31*, 631-640.

Ohler, M., Forbes, D., & Kerr, M. (2010). Depression in nurses. *Canadian Journal of Nursing Research*, *42*(3), 66-82.

Ramachandra, P. U., Varambally, S., Philip, M., & Gangadhar, B. N. (2013), Effect of yoga therapy on anxiety and depressive symptoms and quality-of-life among caregivers of in-patients with neurological disorders at a tertiary care center in India: A randomized controlled trial. *Indian Journal of Psychiatry*, *55*(3), 385-389.

Sadeghipor, N., & Aghdam, B. H. (2021). Investigating the effect of appropriate personal protective equipment on the stress level of care workers in the Covid19 epidemic. Iran. *Health Science Journal*. *3*, 7. doi: 10.1027/MARCR.2021.0154.

Sadeghipor, N., & Aghdam, B. H. (2021). The effect of pesticides on child gender and the level of sexual activities in people exposed –Iran. *MAR Gynecology*, *1*(4). doi: 10.1027/MARGY.2021.0106.

Sadeghipor, N., Aghdam, B. H., & Kabiri, S. (2021). Evaluation of burnout and job stress in care worker and comparison between front-line and second line in care worker during coronavirus epidemic. *Health Science Journal*, *3*, 8. doi: 10.1027/MARCR.2021.0155.

Sadeghipor, N., Kabiri, S., & Aghdam, B. H. (2021). Investigating the pesticides impact on mental health of exposed workers – Iran. *MAR Case Reports*, *2*(6). doi: 10.1027/MARCR.2021.0164.

Sadeghpour, E., & Sangchini, E. K. (2020). Assessment and comparative study of job stress in Jam hospital jobs, Tehran city. *Health Science Journal*, *2*, 4. doi: 10.36648/1791-809X.S2.004.

Seyedi Asl, S. T., Rahnejat, A. M., Elikaee, M. M., Khademi, M., Shahed-HaghGhadam, H., & Taghva, A. (2021). The role of resilience, positive/negative emotions, and character strengths in predicting burnout of military personnel. *EBNESINA*, *22*(4), 4-13.

Seyedi-Asl, S. T., Sadeghi, K., Bakhtiari, M., Ahmadi, S. M., Nazari-Anamagh, A., & Khayatan, T. (2016). Effect of group positive psychotherapy on improvement of life satisfaction and the quality of life in infertile woman. *International Journal of Fertility & Sterility*, *10*(1), 105–112. Doi: 10. 22074/ijfs.2016.4775.

Taghva, A., Seyedi Asl, S. T., Rahnejat, A. M., & Elikaee, M. M. (2020). Resilience, emotions, and character strengths as predictors of job stress in military personnel. *Iranian Journal of Psychiatry & Behavioral Sciences*, *14*(2), e86477. doi: 10.5812/ijpbs.86477

Taso, C. J., Lin, H. S., Lin, W. L., Chen, S. M., Huang, W. T., & Chen, S. W. (2014). The effect of yoga exercise on improving depression, anxiety, and fatigue in woman with breast cancer: a randomized controlled trial. *The Journal of Nursing Research*, *22*(3), 155-164.

Ulger, O., & Yagli, N. V. (2010). Effects of yoga on the quality of life in cancer patients. *Complementary Therapies in Clinical Practice*, *16*(2), 60-63.

Vasconcelos, A., França, I; Coura, A., Enders, B., Cartaxo, H., & Sousa, F. (2013). Self-care in neurogenic intestine in subjects with spinal cord injury: An integrative review. *Online Brazilian Journal of Nursing*, *12*(4), 998-1010. doi: 10.5935/1676- 4285.20133692

Sharma, M. (2014). Yoga as an alternative and complementary approach for stress management: a systematic review. *Evidence-Based Complementary & Alternative Medicine*, *19*(1), 59-67. doi: 10.1177/2156587213503344.