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Effect of music therapy, aroma therapy and combination on aggression and stress among women inter collegiate players

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Abstract

Previous researches proved that Music therapy and Aromatherapy play vital role in managing psychological conditions of different groups of people. The aim of this study was to find out the combined effect of Music therapy and Aromatherapy on psychological variables, aggression and stress among women inter collegiate level players. Hence, this research was undertaken. Randomly selected 100 women intercollegiate players divided into three experimental groups and a control group. Group I as experimented with Music Therapy, Group II with Aromatherapy, group III with combination of music and aromatherapy and control group with no special training. All the subjects were tested prior to and after the training period on selected criterion variables, aggression and stress using standard questionnaires. To test statistical significant, analysis of covariance (ANCOVA) was used. In all cases, the criterion for statistical significance was set at 0.05 level of confidence ($P < 0.05$). Whenever the 'F' ratio was found to be significant, LSD (Least Significant Difference) test was used as post-hoc test to determine which of the paired means differed significantly. The results proved that isolated music therapy and aromatherapy and combined group were significantly influenced aggression and stress compared to control group. Further it was also found combined group was also found to be better than isolated experimental groups of women players. It was concluded that combined effect of music therapy and aroma therapy found to be superior to isolated treatments, namely music therapy and aroma therapy. Based on these findings it was recommended to incorporate music and aroma therapy to enhance the overall mood of the team as well as to decrease tension and stress within an environment.

Keywords: Music therapy, aromatherapy, aggression, stress, intercollegiate women players

Introduction

Scientific studies into the effects of music in sport and exercise contexts have reported slightly more modest reactions than these. Nonetheless, music has been shown to have the potential to make a significant difference in performance in the hotbed of competition in which skills and abilities are often closely matched. Research has supported at least five ways music can benefit sporting performance and preparation. Music can help you dissociate, or turn off mentally, from feelings of pain or fatigue, lift or regulate your mood and alter your arousal level. (Thakare AE, *et al.* (2017) [13].

Music can reach and extend our deepest thoughts and feeling in a way that verbal language cannot. Music can break down strong emotional defenses and allow for the expression of feelings. There is no doubt that music has a profound effect on emotions at both the conscious and unconscious levels. William Davis and Michael Thaut attempted to determine which types of music people considered relaxing. It was observed that physiological homeostasis was not attained through all musical selections. Music has a tremendous relaxation effect on our mind as well as our body. Modern therapeutic science says that music has a massaging effect on our brain. Music therapy is gaining more and more grounds in the treatment of various disorders. The resonating effect of music enables the subjects to thread back to their normal or original state of mind. (Alcantara-Silva T, *et al.* (2018) [2].

Scientific studies into the effects of music in sport and exercise contexts have reported slightly more modest reactions. During the last two decades, advancements in technology have allowed music to grow into being an effective intervention to achieve a range of desirable psychological and performance effects among athletes. Music is read differently in the brain

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than nonmusical tones and is connected to many different areas of the brain. Listening to music has also been found to affect learning. Music has been widely recommended as a technique to enhance the psychophysical state of participants in sport & exercise. (Jarraya M, *et al.* (2012)^[8].

Aromatherapy is a fascinating alternative medicine that involves the use of volatile plant materials, also known as essential oils that can be aromatically inhaled by patients with a wide variety of health conditions. It is often used to improve mood, change cognitive states, and can also be utilized as a supplemental medicine. (Hines S, Steels E, Chang A, Gibbons K (2018)^[3]. A form of alternative medicine, aromatherapy is gaining momentum. It is used for a variety of applications, including pain relief, mood enhancement, and increased cognitive function. Experts think aromatherapy activates areas in the nose called smell receptors, which send messages through the nervous system to the brain.

The oils may activate certain areas of the brain, like the limbic system, which plays a role in emotions. They could also have an impact on the hypothalamus, which may respond to the oil by creating feel-good brain chemicals like serotonin. (Adams, Robert P. (2007)^[1] Research shows that aromatherapy can have health benefits. It may ease stress, anxiety, and depression. May boost feelings of relaxation, improve sleep, help improve quality of life for people with long-term health problems like dementia, ease certain types of pain including pain from kidney stones and osteoarthritis of the knee and fight bacteria when put them on the skin and ease some of the side effects of cancer treatment, like nausea and pain. (Ball, Emily L. *et al.* (2020)^[3].

Aggression is the infliction of an aversive stimulus on an unwilling victim with the intent to harm and with the expectation that the act will be successful. Aggression is overt, often harmful, social interaction to inflict damage or other unpleasantness upon another individual. It may occur either in retaliation or without provocation. Frustration due to blocked goals can cause aggression. Aggression can be classified into direct and indirect aggression, whilst the first is characterized by physical or verbal behavior intended to cause harm to someone, the second one is characterized by behavior intended to harm the social relations of an individual or a group. (Buss, A. H. (1961)^[4].

Stress is the inability to cope up with a perceived threat to one's mental, physical, spiritual, and emotional wellbeing, which results in a series of physiological responses and adaptations. The important word to emphasize here is perceived. Perception often changes from person to person. Many believe that humans need some degree of stress to stay healthy. The human body requires physiological arousal to ensure the optimal functioning of several organs, including the heart and the musculoskeletal system. When stress serves as a positive motivation, it is considered beneficial. Beyond this optimal point, the stress of any kind does more harm than good. Psychoneuroimmunology data available showing that there are indeed some physiological differences between good and bad stress. (Folkman, S.; Moskowitz, J. (2000)^[6].

Jesna, C.A., Radha Krishnan, and John Vijay Saga K. (2017)^[9] conducted a study to assess the effect of selected raga of music on aggression in children with mental illness. Findings revealed that a significant reduction in aggression scores was measured with MOAS from before the intervention, 7th day, 15th day, and 21st day. No significant difference in reduction on aggression score was noticed with the control group. This study has proven that music therapy is practical, feasible, and helpful in maintaining a therapeutic environment among

children with mental illness.

Radhika Rastogi and Ellen Silver (2014)^[12] conducted a study on the association of music with stress, test anxiety, and test grades among high school students and developed a distraction theory, which posits that music helps individuals cope by distracting them from stressful scenarios, has been proposed to explain the pain-relieving nature of music in hospital settings. This may explain the lack of stress-reduction by music in an academic context.

Cori L. Pelletier (2004)^[5] made a meta-analytic review of research articles using music to decrease arousal due to stress was conducted on 22 quantitative studies. Results demonstrated that music alone and music-assisted relaxation techniques significantly decreased arousal ($d = +.67$). Further analysis of each study revealed that the amount of stress reduction was significantly different when considering age, type of stress, music-assisted relaxation technique, musical preference, previous music experience, and type of intervention. Implications and suggestions for future research are discussed.

Neil Morris, Steven Birtwistle & Margaret Toms (1995)^[11] conducted a study on Anxiety reduction by aromatherapy and found with geranium oil inhalation both state and trait scores were significantly lowered across the session. The reduction in reported anxiety is probably only of enough magnitude (18%) to be clinically important for state anxiety following geranium oil inhalation. Margaret Louis & Susan D. Kowalski, (2002)^[10] conducted a study on the use of aromatherapy with hospice patients to decrease pain, anxiety, and depression and to promote an increased sense of well-being. And results reflected a positive, yet small, change in blood pressure and pulse, pain, anxiety, depression, and sense of well-being after both the humidified water treatment and the lavender treatment. Following the control session (no treatment), there was also a slight improvement in vital signs, depression, and sense of well-being, but not in pain or anxiety levels.

Thus, the previous researches proved that music therapy and aromatherapy play vital role in managing psychological conditions of different groups of people. These studies were concentrated on isolated treatments either music therapy or aromatherapy. The investigator found research gap that there was further scope for research to find out the combined effect of music therapy and aromatherapy on psychological variables, aggression and stress among women inter collegiate level players. Hence, this research was undertaken.

Methodology

Selection Subjects

The study was formulated to one hundred female intercollegiate players (N=100) of St. Xavier's College, Aluva, Ernakulam District, Nirmala Arts & Science College, Mulamthuruthy, Union Christian College, Aluva, Ernakulam District, and Toc-H Institute of Science & Technology, Arakkunnam, Ernakulam District,

The age group of the subjects ranged from 18-22 years. The randomly selected subjects were equally divided into four groups (n=25) namely:

- Music therapy group
- Aromatherapy group
- Combination group
- Control group

Selection of Variables

The study was delimited to the following variables:

Criterion variables

- Music therapy
- Aromatherapy
- Combination of music and aromatherapy
- Control

Dependent variables

- Aggression
- Stress

Experimental Design and Statistical Procedure

The experimental design of this study was random group design. One hundred subjects were randomly selected and equally divided into three experimental groups and a control group. All the subjects were tested prior to and after the training period on selected criterion variables, aggression and stress using standard questionnaires. No attempt was made to equate the groups in any manner. Hence, to make adjustments for difference in the initial means and the adjusted post-test means for significant differences, the analysis of covariance (ANCOVA) was used. In all cases, the criterion for statistical significance was set at 0.05 level of confidence ($P < 0.05$). Whenever the 'F' ratio was found to be significant, LSD (Least Significant Difference) test was used as post-hoc test to determine which of the paired means differed significantly.

Results and Discussions**Aggression**

The descriptive statistics of the aggression among different therapy were presented in Table 1

Table 1: Descriptive Statistics of aggression scores among groups

Dependent Variable: Treatments	Aggression Post-test Mean	Std. Deviation	N
Music Therapy	11.48	2.084	25
Aroma Therapy	11.84	1.951	25
Combination of MT & AT	10.80	2.198	25
Control Group	13.00	2.661	25
Total	11.78	2.347	100

The mean score indicate the participant are in normal aggressive mood. A rating of less than 10 indicates that, the participants have lack of aggressiveness and holds them back in many areas of their life. Mean score between 10 to 13 shows that participants have normal level of aggressiveness and further strategies will help them to handle some areas more effectively. More than 13 shows participants' aggressive approach means that participants feel at ease in most situations, but it is important to avoid complacency. The mean scores of the all the groups indicates that, more than 68% of the participants belonging to the normal aggression levels, it may be because of all the participants were athletes and regularly undergoing the different kind of physical training

and facing competitions regularly.

Table 2: Adjusted mean and standard error of Aggression

Source	Aggression Post-test				
	Treatments	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Music Therapy	11.345 ^a	0.269	10.810	11.879	
Aroma Therapy	11.825 ^a	0.269	11.291	12.359	
Combination of MT & AT	10.665 ^a	0.269	10.130	11.199	
Control Group	13.286 ^a	0.270	12.751	13.821	

a. Covariates appearing in the model are evaluated at the following values: Aggression Pre-test = 13.66.

The adjusted mean scores and standard error for the Aggression among groups have been shown in table 3.

Table 3: Ancova on Tests of Between-Subjects Effects Aggression

Dependent Variable: Source	Aggression					
	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Treatments	91.781	3	30.594	16.933	0.000	0.348
Error	171.636	95	1.807			
Total	14422.000	100				
Corrected Total	545.160	99				

a. R Squared = .685 (Adjusted R Squared = .672)

The values of the means and standard deviations for the data on aggression in different groups during post testing are shown in Table 1. Further, adjusted means and standard error for the data on aggression of different groups during post-testing have been shown in Table 2. Table 3 shows the F-value for comparing the adjusted means of treatment and control groups in post-testing. Since p -value for F-statistics ($F=16.933$) is 0.000 which is less than 0.05, it was significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on aggression between treatment groups may be rejected at 5% level. Partial Eta Squared (η^2) = 0.348 indicates a large effect. This means that 34.8% variability exists between groups due to treatments on variable aggression. Post hoc ("after this" in Latin) tests is used to uncover specific differences between three or more group means when an analysis of variance (ANOVA) F test is significant. Because criterion F is "omnibus", it will simply tell researchers that there is a difference between groups, but not between specific groups. Post hoc tests enable researchers to localize these specific differences and are calculated only if the F omnibus test is significant. The Fisher LSD test refers to the least significant difference test. The LSD test is simply the justification that if an omnibus test is performed and is meaningful, the null assumption is erroneous, as shown in Table 4.

Table 4: Pairwise comparison between adjusted treatment means

Dependent Variable: (I) Treatments	Aggression Post-test	Mean Difference (I-J)	Std. Error	Sig. ^b
Music Therapy (M=11.345)	Aroma Therapy	-0.480	0.380	0.210
	Combination of MT & AT	0.680	0.380	0.077
	Control Group	-1.941 [*]	0.382	0.000
Aroma Therapy (M= 11.825)	Music Therapy	0.480	0.380	0.210
	Combination of MT & AT	1.160 [*]	0.380	0.003
	Control Group	-1.461 [*]	0.381	0.000
Combination of MT & AT (M=10.665)	Music Therapy	-0.680	0.380	0.077
	Aroma Therapy	-1.160 [*]	0.380	0.003
	Control Group	-2.621 [*]	0.382	0.000

Control Group (M= 13.286)	Music Therapy	1.941*	0.382	0.000
	Aroma Therapy	1.461*	0.381	0.000
	Combination of MT & AT	2.621*	0.382	0.000

Based on estimated marginal means, *The mean difference is significant at the .05 level. ^b Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Post hoc analyses using the LSD post hoc criterion for significance indicated that the mean gain in aggression of aroma therapy was higher among the treatment groups (M = 11.825) than in the other two treatment conditions (music and aroma therapy)combined, M=11.345 and M = 10.665

respectively) and significantly differ with other all treatment conditions.

An illustration of the estimated marginal means between treatments is given in Figure1:

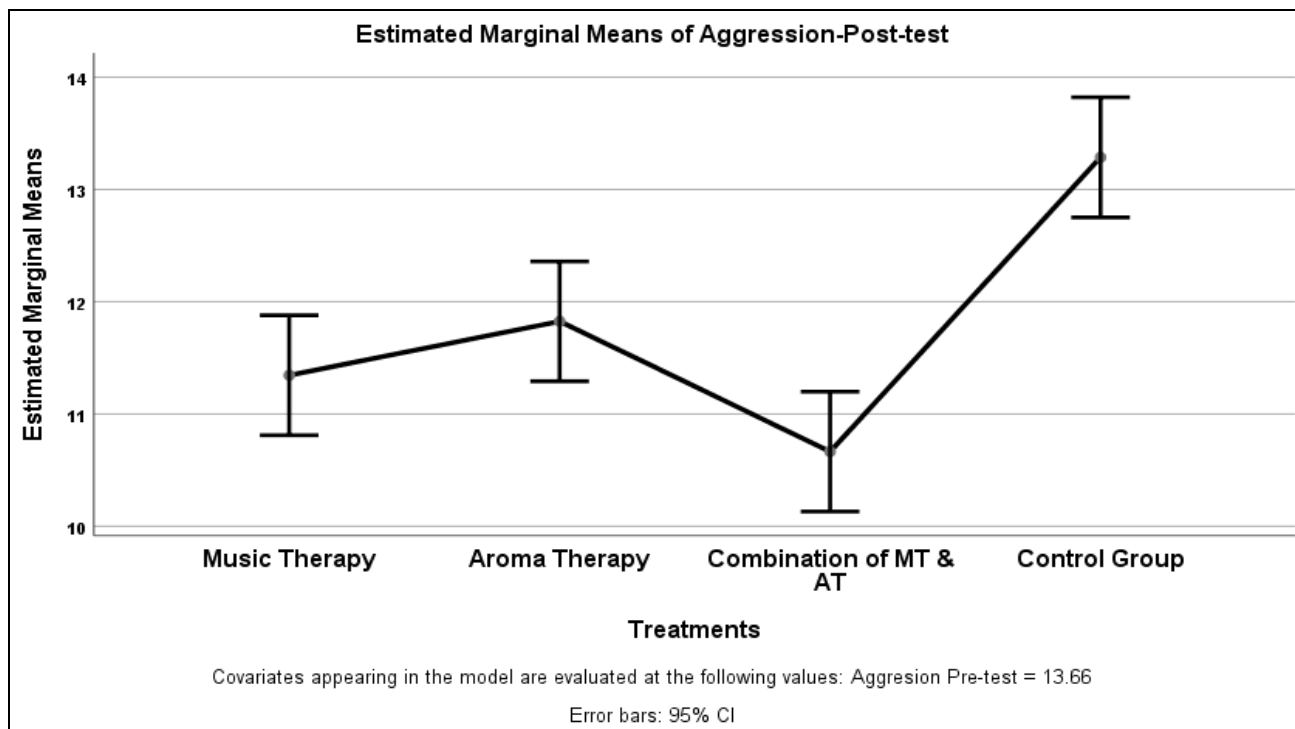


Fig 1: Profile Plots of Estimated Marginal Means on Aggression

Stress

The descriptive statistics of the stress factor among different therapy were presented in Table 5.

Table 5: Descriptive Statistics of Stress Factor scores among groups

Dependent Variable: Treatments	Stress Factor Post-test Mean	Std. Deviation	N
Music Therapy	90.96	7.525	25
Aroma Therapy	89.20	7.337	25
Combination of MT & AT	93.32	8.759	25
Control Group	92.48	7.495	25
Total	91.49	7.841	100

The higher the mean score indicate that more confident the participant are. A rating of less than 80 indicates that, the participants have lack of stress factor and holds them back in many areas of their life. Mean score between 81 to 100 shows that participants have high stress factor, but building strategies will help them to handle some areas more effectively. More than 100 shows participants outgoing approach means that participants feel at ease in most situations, but it is important to avoid complacency. The mean scores of the all the groups indicates that, more than 65% of the participants belonging to the high stress factor group, it may be because of all the participants were athletes and regularly undergoing the different kind of physical training and facing competitions regularly.

Table 6: Adjusted mean and standard error of Stress Factor

Source	Stress Factor Post-test			
	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Treatments				
Music Therapy	91.905 ^a	0.704	90.508	93.303
Aroma Therapy	89.862 ^a	0.703	88.466	91.258
Combination of MT & AT	95.305 ^a	0.710	93.896	96.714
Control Group	88.887 ^a	0.726	87.446	90.329

a. Covariates appearing in the model are evaluated at the following values: Stress Factor Pre-test = 81.60.

The adjusted mean scores and standard error for the stress factor among groups have been shown in table 7.

Table 7: Ancova on Tests of Between-Subjects Effects Stress Factor

Dependent Variable	Stress Factor					
	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Treatments	571.685	3	190.562	15.449	0.000	0.328
Error	1171.793	95	12.335			
Total	843129.000	100				
Corrected Total	6086.990	99				

a. R Squared = .807 (Adjusted R Squared = .799)

The values of the means and standard deviations for the data on stress factors in different groups during post testing are shown in Table 5. Further, adjusted means and standard error for the data on stress of different groups during post-testing have been shown in Table 6. Table 7 shows the F-value for comparing the adjusted means of treatment and control groups in post-testing. Since *p*-value for F-statistics (F=15.443) is 0.000 which is less than 0.05, it was significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on general fatigue between treatment groups may be rejected at 5% level. Partial Eta Squared (η^2) = 0.328 indicates a large effect. This means that 32.8% variability exists between groups due to treatments on variable Stress.

Post hoc (“after this” in Latin) tests is used to uncover specific differences between three or more group means when an analysis of variance (ANOVA) F test is significant. Because criterion F is "omnibus", it will simply tell researchers that there is a difference between groups, but not between specific groups. Post hoc tests enable researchers to localize these specific differences and are calculated only if the F omnibus test is significant. The Fisher LSD test refers to the least significant difference test. The LSD test is simply the justification that if an omnibus test is performed and is meaningful, the null assumption is erroneous, as shown in Table 8.

Table 8: Pair wise comparison between adjusted treatment means

Dependent Variable: (I) Treatments	Stress Factor Post-test	Mean Difference (I-J)	Std. Error	Sig. ^b
Music Therapy (M=183.473)	Aroma Therapy	2.044*	0.993	0.042
	Combination of MT & AT	-3.400*	0.995	0.001
	Control Group	3.018*	1.020	0.004
Aroma Therapy (M= 180.647)	Music Therapy	-2.044*	0.993	0.042
	Combination of MT & AT	-5.444*	0.996	0.000
	Control Group	0.974	1.017	0.341
Combination of MT & AT (M=194.404)	Music Therapy	3.400*	0.995	0.001
	Aroma Therapy	5.444*	0.996	0.000
	Control Group	6.418*	1.034	0.000
Control Group (M= 166.716)	Music Therapy	-3.018*	1.020	0.004
	Aroma Therapy	-0.974	1.017	0.341
	Combination of MT & AT	-6.418*	1.034	0.000

Based on estimated marginal means, * The mean difference is significant at the .05 level. ^b Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Post hoc analyses using the LSD post hoc criterion for significance indicated that the mean gain in stress of aroma therapy was significantly lower among the treatment groups (M = 180.647) than in the other two treatment conditions (music and aroma therapy)combined (M = 183. 473 and M =

194.404) and significantly differ with other all treatment conditions.

An illustration of the estimated marginal means between treatments is given in Figure 2.

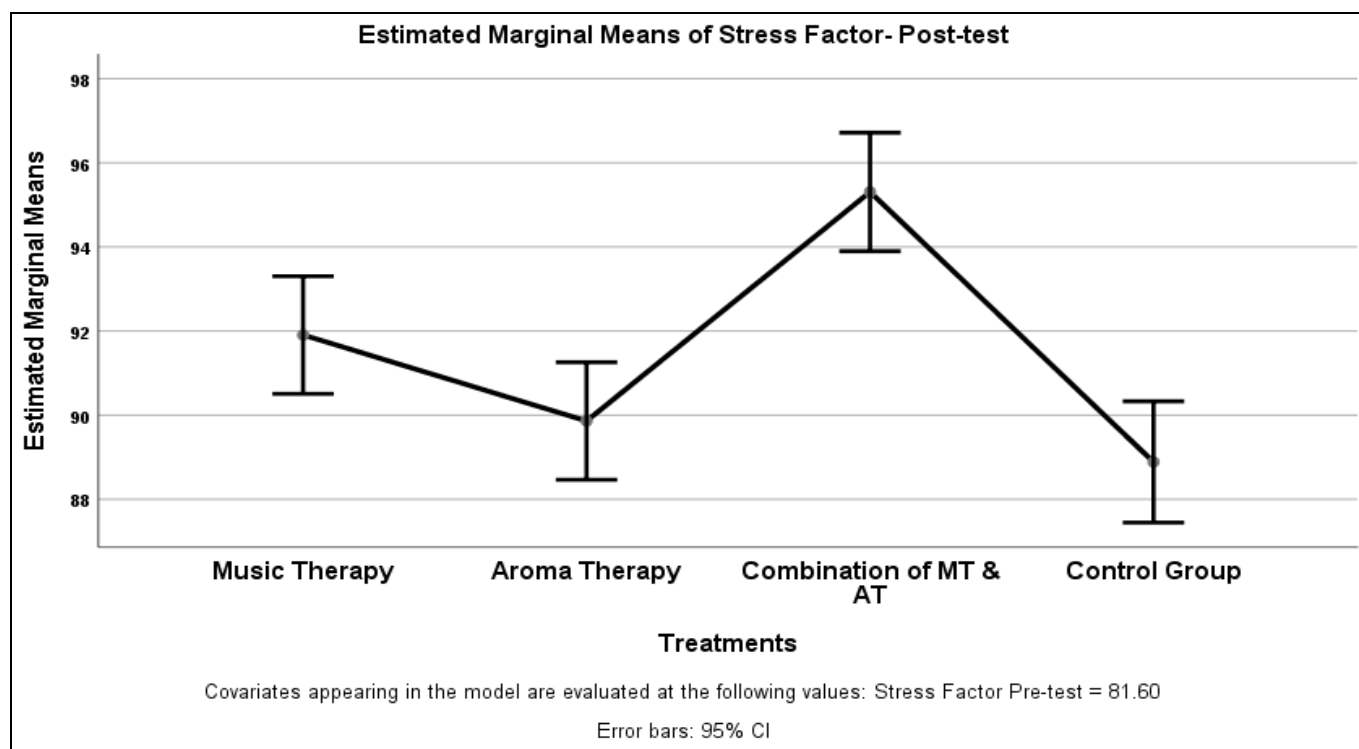


Fig 2: Profile Plots of Estimated Marginal Means on Stress.

Findings

The results proved that music therapy significantly influenced

selected psychological variables, aggression and stress compared to control group. Further it was also found aroma

therapy significantly influenced selected psychological variables, aggression and stress of women players. The results further proved that music therapy combined with aroma therapy significantly influenced selected psychological variables, aggression and stress. The effect of isolated and combined treatments proved comparing between treatment groups, music therapy combined with aroma therapy proved that combined music and aromatherapy would be significantly better than isolated music therapy and aroma therapy. The findings of this study were in agreement with the previous researches.

Conclusions

It was concluded that combined effect of music therapy and aroma therapy found to be superior to isolated treatments, namely music therapy and aroma therapy. Based on these findings it was recommended to incorporate music and aroma therapy to enhance the overall mood of the team as well as to decrease tension and stress within an environment.

References

1. Adams, Robert P. Identification of Essential Oil Components by Gas Chromatography/Mass Spectrometry, 2007.
2. Alcantara-Silva T, *et al.* Music therapy reduces radiotherapy-induced fatigue in patients with breast or gynecological cancer: A randomized trial, 2018. DOI: 1177/1534735418757349
3. Ball Emily L, Owen-Booth, Bethan Gray, Amy Shenkin, Susan D, Hewitt Jonathan, *et al.* Aromatherapy for dementia. The Cochrane Database of Systematic Reviews, 2020, 8.
4. Buss AH. The psychology of aggression. Hoboken, NJ: John Wiley, 1961.
5. Cori L Pelletier. The effect of music on decreasing arousal due to stress: a meta-analysis, *J Music Ther.* 2004;41(3):192-214.
6. Folkman S, Moskowitz J. Stress, Positive Emotion, and Coping. *Current Directions in Psychological Science.* 2000;9(4):115–118.
7. Hines S, Steels E, Chang A, Gibbons K. Aromatherapy for treatment of postoperative nausea and vomiting. *Cochrane Database Syst Rev.* 2018;(3):CD007598
8. Jarraya M, *et al.* The effects of music on high-intensity short-term exercise in well trained athletes, 2012. ncbi.nlm.nih.gov/pmc/articles/PMC3525819
9. Jesna CA, Radha Krishnan, John Vijay Saga K. A study to assess the effect of selected raga of music on aggression in children, 2017.
10. Margaret Louis, Susan D Kowalski. Use of aromatherapy with hospice patients to decrease pain, anxiety, and depression and to promote an increased sense of well-being *Am J Hosp Palliat Care.* 2002;9(6):381-6.
11. Neil Morris, Steven Birtwistle, Margaret Toms. Anxiety reduction by aromatherapy: Anxiolytic effects of inhalation of geranium and rosemary, *International Journal of Aromatherapy.* 1995;7:33-39.
12. Radhika Rastogi, Ellen Silver. Association of Music with Stress, Test Anxiety, and Test Grades Among High School Students, 2014. retrieved from <https://www.semanticscholar.org/paper/Association-of-Music-with-Stress%2C-Test-Anxiety%2C-and-Rastogi-Silver/861bcc076824f8e26f5d32ab1bf8f73cc1c3643b>
13. Thakare AE, *et al.* Effect of music tempo on exercise performance and heart rate among young adults, 2017.