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Combined effect of music therapy and aroma therapy on risk taking and emotional intelligence among women inter collegiate players

Ajitha Kumari KR and Dr. K Murugavel

Abstract

The purpose of the study was to find out the combined effect of music therapy and aromatherapy on risk taking and emotional intelligence among women inter collegiate players. 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, risk taking and emotional intelligence 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 ($P < 0.05$). The results proved that isolated music therapy and aromatherapy and combined group were significantly influenced risk taking and emotional intelligence 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 than 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 psychological preparation within an environment.

Keywords: Music therapy, aromatherapy, combined therapy, risk taking, emotional intelligence, intercollegiate women players

Introduction

Any approach or theory of music therapy is the concept of the emotional effect of music. Although music has the power to cause mental, physical, emotional, and spiritual responses in us. Not everyone responds to music in the same way, and an individual does not necessarily respond to one composition the same way twice. Responses can be extremely intense, and depend on the likes and dislikes of certain types of music or the composer or performer. Most research shows that the effects of music are greater when the music has more meaning for the listener. Because of its dynamic quality, our primary attraction to music is both physical and emotional. Physically, music, causes pressure waves that are felt bodily, and for the emotional effect, music creates mood environments to which we respond in a subconscious and non-verbal level. Our emotional reaction to music creates in us physical reactions – the goose bump effect or when we feel the hairs on the back of our neck rising, tears coming into our eyes, our heart beating faster, and our breathing temporarily stopping. Physical reactions to certain types of music, in some of the same ways, as just described, also cause us to experience emotional feelings. Whereas emotions result from responses to specific objects, situations, or persons, moods have been called ‘metaphysical generalizations of the emotions’ which create feelings. (Chase, Kristen M. (2002)

Music therapy is now accepted as a discipline alongside other paramedical professions such as physiotherapy, occupational therapy, speech therapy, and psychology in paramedical services and special education services provided by health and education authorities. Behavioural approaches in music therapy have emerged mainly in the United States of America and they have frequently developed the use of music as a stimulant, a relaxant, or a reward.

In addition, the structure and properties of music have been applied and manipulated to achieve development, growth, and improvement.

The psychology of music is a relatively new area of study and is not established as a profession or a research field, but from an international perspective, the psychology of music can be characterized as an exciting interdisciplinary science at the point of intersection between musicology, psychology, acoustics, sociology, anthropology, and neurology. Important topics within this area include:

- The function of music in the life and history of mankind
- The function of music in the life and identity of a person
- Auditory perception and musical memory
- Auditory imagery
- The brain's processing of musical inputs
- The origin of musical abilities and the development of musical skills
- The meaning of music and musical preferences for the forming of identity
- The psychology of music performance and composition.

Perhaps the most widespread and popular use of aromatherapy is for stress relief. The aromatic compounds from many different essential oils are known as relaxants and can help soothe your mind and eliminate anxiety. This is what most people who perform aromatherapy at home use it for since the mixtures are very simple and the research on this aspect of aromatherapy is very well-known and widely studied. Some of the best essential oils for stress relief are lemon oil, lavender, bergamot, and peppermint, vetiver, and ylang-ylang essential oils. Certain studies have also shown that lemon oil can improve mood and reduce outbursts of anger.

Aromatherapy is very commonly used to eliminate feelings of depression, and due to the very complicated side effects of pharmaceutical antidepressants, this is a very important function of aromatherapy. While this is useful as a complementary treatment, psychological help or counselling should be sought out if depression continues or worsens. In terms of the best essential oils to use for reducing depression, most specialists suggest peppermint, chamomile, lavender, and jasmine. (Ball, Emily L. *et al.* (2020)^[3].

Emotional Intelligence can be summed up as recognition of different emotional states, assessing the effects of emotions on behaviour, and the ability to switch into the best emotional state to manage a specific situation. Success in sport is often associated with vigour and anger. Importantly, emotionally intelligent people can get themselves into the appropriate emotional states for the demands of the situation. If the situation requires high arousal, emotionally intelligent people are good at getting themselves psyched up and prepared. Equally, if the situation requires calmness, emotionally intelligent people are good at relaxing themselves. Athletes that perform in the zone effectively regulate their emotions. (Beldoch, Michael; Davitz, Joel Robert (1976)^[1].

Taking risks is an integral part of life and is part of growing up. If we don't take risks, we never understand our capabilities and we never discover new ways of experiences. Nowadays, the world is more competitive in the perspectives of progress. Doing or trying new things and seeking new knowledge or testing the boundaries, occurs throughout all the developmental stages of a person, and for these extensive activities, risk-taking is required. Comes to risk-taking, an individual's behaviour is two extremes to which they are fighting against. Some people are reluctant to take risks,

demanding guaranteed results but some are not so. Some people take risks easily, believing that their willingness to take risk make them brave. Taking risks will uplift our self-confidence and self-respect, help to empower us to feel stronger (Kaplan, S.; Garrick, B.J. (1981)^[9].

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].

Hayakawa, Miki, Takada, and Tanaka (2000) assessed the effects of traditional Japanese folk music (used asynchronously) and the synchronous use of aerobics dance music on several dimensions of mood and found both music conditions lessened feelings of fatigue when compared to the metronome control condition. Cori L. Pelletier (2004) made a meta-analytic reviewed of research articles using music to decrease arousal due to stress and 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. Tomas Chamorro-Premuzic and Adrian Furnham (2007)^[12] found that individual differences in personality and cognitive ability may partly determine how we experience music. Sorenson *et al.*, (2008)^[11] found incorporating music to enhance the overall mood of the team as well as to decrease tension and stress within an environment defined the subthemes for mood. Andrew M. Lane, Paul A. Davis, and Tracey J. (2010)^[2] compared the effects of two different music interventions on changes in emotional states and performance outcome. Indicated that enhanced performance was significantly greater among participants reporting music to be motivational as indicated by high scores on the Brunel Music Rating Inventory-2.

Neil Morris, Steven Birtwistle & Margaret Toms (1995)^[10] found on Anxiety reduction by aromatherapy with geranium oil inhalation both state and trait scores were significantly lowered across the session. Jennifer Edge (2003)^[7] addressed the effect of aromatherapy massage on mood, anxiety, and relaxation in adult mental health and found improvements were also shown in all areas. When comparing the visual analog scale results. Ji-Yeong Seo (2009)^[8] found stress levels were significantly lower when the students received the aroma treatment compared to when they received the placebo treatment.

The researcher is interested to find out the combined effect of music therapy and aromatherapy on risk taking and emotional intelligence of women intercollegiate level players in this study.

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, and 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

- Risk Taking
- Emotional Intelligence

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

Risk Taking: The descriptive statistics of the Risk Taking among different therapy were presented in Table 1

Table 1: Descriptive Statistics of risk-taking scores among groups

Dependent Variable: Treatments	Risk Taking Post-test Mean	Std. Deviation	N
Music Therapy	53.60	5.993	25
Aroma Therapy	55.48	5.767	25
Combination of MT & AT	55.88	5.600	25
Control Group	51.76	6.043	25
Total	54.18	5.996	100

The higher the mean score indicate that more risk taking the participant are. A rating of less than 45 indicates that, the participants have lack of risk taking behaviour and holds them back in many areas of their life. Mean score between 46 to 60 shows that participants have high risk taking, but confidence building strategies will help them to handle some areas more effectively. A score more than 60 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 71% of

the participants belonging to the high risk taking 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 2: Adjusted mean and standard error of Risk Taking

Source	Risk Taking Post-test			
	Mean	Std. Error	95% Confidence Interval	
Treatments			Lower Bound	Upper Bound
Music Therapy	54.761 ^a	0.346	54.075	55.448
Aroma Therapy	53.091 ^a	0.352	52.393	53.790
Combination of MT & AT	58.325 ^a	0.352	57.626	59.024
Control Group	50.542 ^a	0.346	49.855	51.229

a. Covariates appearing in the model are evaluated at the following values: Risk Taking Pre-test = 46.79.

The adjusted mean scores and standard error for the risk-taking among groups have been shown in table 2.

Table 3: Ancova on Tests of Between-Subjects Effects Risk Taking

Dependent Variable	Risk Taking					
	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Treatments	739.510	3	246.503	83.438	0.000	0.725
Error	280.662	95	2.954			
Total	297106.000	100				
Corrected Total	3558.760	99				

a. R Squared = .921 (Adjusted R Squared = .918)

The values of the means and standard deviations for the data on risk taking in different groups during post testing are shown in Table 1. Further, adjusted means and standard error for the data on risk taking 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 ($F=83.438$) 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 risk taking between treatment groups may be rejected at 5% level. Partial Eta Squared ($\eta^2 = 0.725$) indicates a large effect. This means that 72.5% variability exists between groups due to treatments on variable risk taking.

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: Pair wise comparison between adjusted treatment means

Dependent Variable: (I) Treatments	Risk Taking Post-test	Mean Difference (I-J)	Std. Error	Sig. ^b
Music Therapy (M=54.761)	Combination of MT & AT	-3.564*	0.488	0.000
	Control Group	4.219*	0.492	0.000
Aroma Therapy	Music Therapy	-1.670*	0.499	0.001

(M= 53.091)	Combination of MT & AT	-5.234*	0.509	0.000
	Control Group	2.549*	0.488	0.000
Combination of MT & AT (M=58.325)	Music Therapy	3.564*	0.488	0.000
	Aroma Therapy	5.234*	0.509	0.000
	Control Group	7.783*	0.500	0.000
Control Group (M= 50.542)	Music Therapy	-4.219*	0.492	0.000
	Aroma Therapy	-2.549*	0.488	0.000
	Combination of MT & AT	-7.783*	0.500	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 risk taking of aroma therapy was significantly lower among the treatment groups (M = 53.091) than in the other two treatment conditions (music and aroma therapy)combined (M = 54.761

and M = 50.325 respectively) and significantly differ with other all treatment conditions.

An illustration of the estimated marginal means between treatments is given in Figure 1.

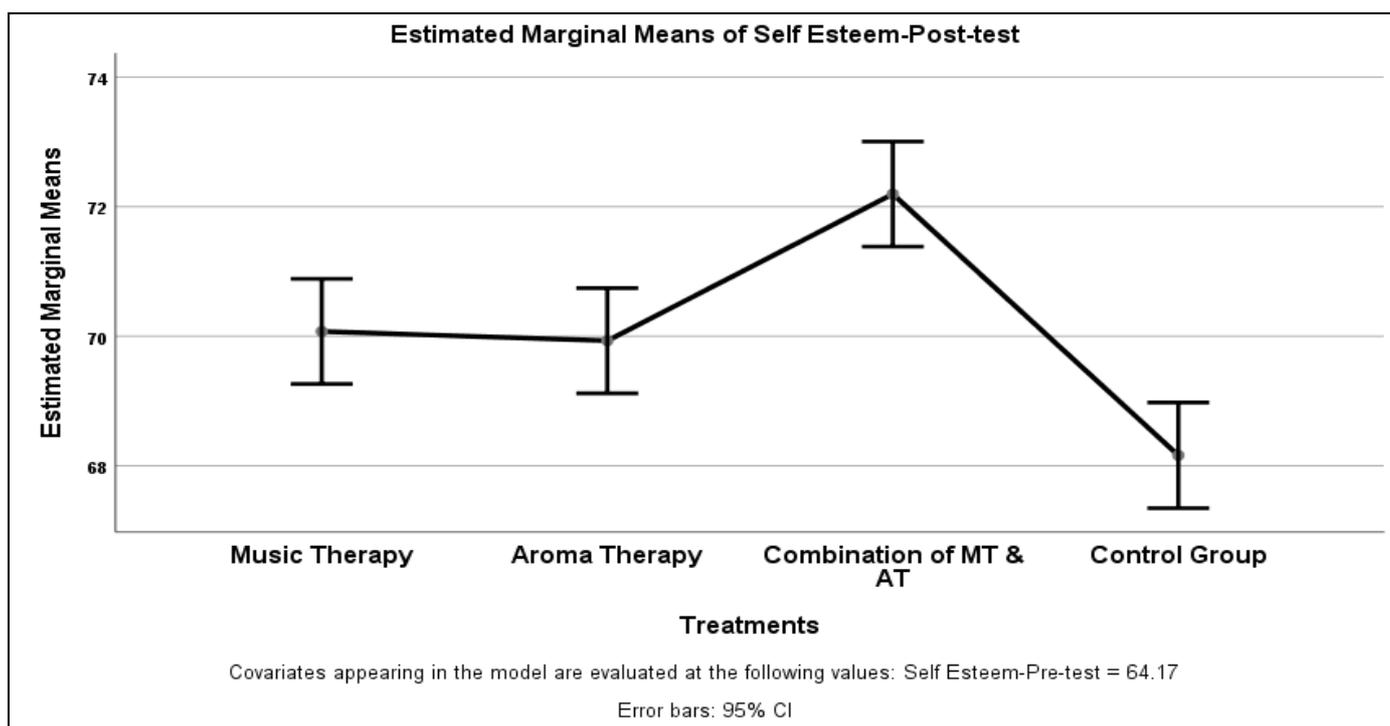


Fig 1: Profile Plots of Estimated Marginal Means on Risk Taking

Sports Emotional Intelligence

The descriptive statistics of the sports emotional intelligence among different therapy were presented in Table 5.

Table 5: Descriptive Statistics of sports emotional intelligence scores among groups

Dependent Variable: Treatments	Sports Emotional Intelligence Post-test Mean	Std. Deviation	N
Music Therapy	195.00	38.161	25
Aroma Therapy	174.60	35.529	25
Combination of MT & AT	184.20	34.661	25
Control Group	171.44	39.882	25
Total	181.31	37.700	100

The higher the mean score indicate that more emotional intelligence the participant are. A rating of less than 120 indicates that, the participants have lack of emotional intelligence and holds them back in many areas of their life. Mean score between 121 to 200 shows that participants have high sports emotional intelligence, but confidence building strategies will help them to handle some areas more effectively. More than 200 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 69% of the participants belonging to the high emotional intelligence, 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 Sports Emotional Intelligence

Source	Sports Emotional Intelligence Post-test			
	Mean	Std. Error	95% Confidence Interval	
Treatments			Lower Bound	Upper Bound
Music Therapy	183.473 ^a	2.918	177.679	189.267
Aroma Therapy	180.647 ^a	2.888	174.914	186.380
Combination of MT & AT	194.404 ^a	2.909	188.628	200.180
Control Group	166.716 ^a	2.883	160.992	172.440

a. Covariates appearing in the model are evaluated at the following values: Sports Emotional Intelligence- Pre-test = 143.20.

The adjusted mean scores and standard error for the emotional intelligence among groups have been shown in table 6.

Table 7: Ancova on Tests of Between-Subjects Effects Sports Emotional Intelligence

Dependent Variable	Sports Emotional Intelligence					
	Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Treatments	9582.129	3	3194.043	15.443	0.000	0.328
Error	19648.618	95	206.828			
Total	3428041.000	100				
Corrected Total	140709.390	99				

a. R Squared = .860 (Adjusted R Squared = .854)

The values of the means and standard deviations for the data on sports emotional intelligence in different groups during post testing are shown in Table 5. Further, adjusted means and standard error for the data on sports emotional intelligence 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 sports emotional intelligence 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 sports emotional intelligence.

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: Pairwise comparison between adjusted treatment means

Dependent Variable: (I) Treatments	Sports Emotional Intelligence Post-test	Mean Difference (I-J)	Std. Error	Sig. ^b
Music Therapy (M=183.473)	Aroma Therapy	2.826	4.137	0.496
	Combination of MT & AT	-10.931*	4.173	0.010
	Control Group	16.757*	4.078	0.000
Aroma Therapy (M= 180.647)	Music Therapy	-2.826	4.137	0.496
	Combination of MT & AT	-13.757*	4.072	0.001
	Control Group	13.931*	4.094	0.001
Combination of MT & AT (M=194.404)	Music Therapy	10.931*	4.173	0.010
	Aroma Therapy	13.757*	4.072	0.001
	Control Group	27.688*	4.118	0.000
Control Group (M= 166.716)	Music Therapy	-16.757*	4.078	0.000
	Aroma Therapy	-13.931*	4.094	0.001
	Combination of MT & AT	-9.591*	1.283	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 sports emotional intelligence 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 = 107.163 respectively) and significantly differ with other all treatment conditions.

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

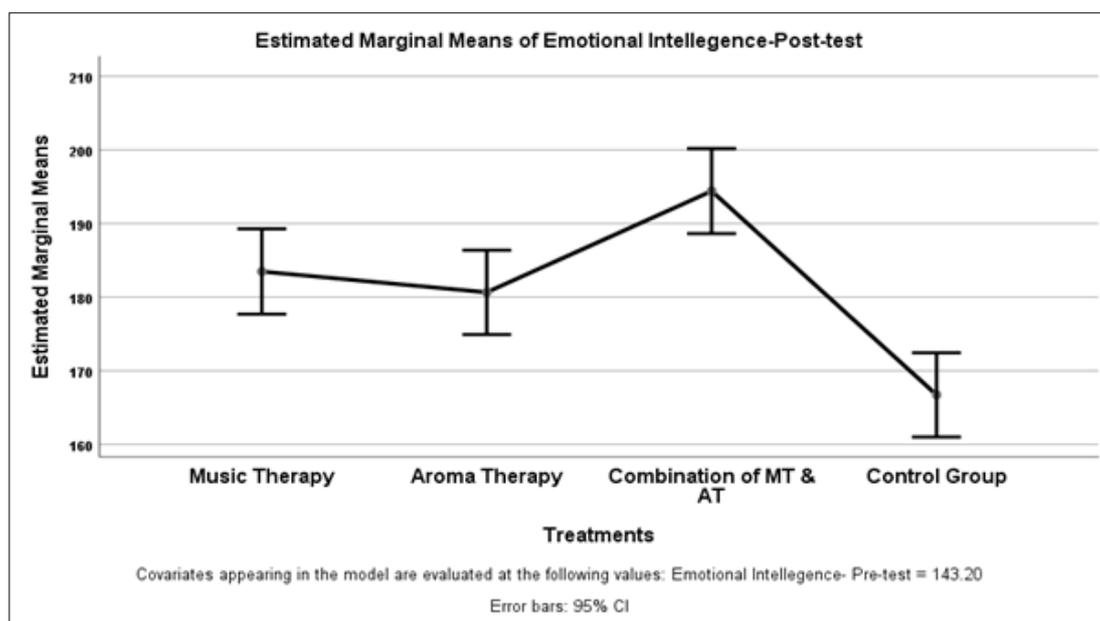


Fig 2: Profile Plots of Estimated Marginal Means on Sports Emotional Intelligence

Findings

The results proved that music therapy significantly influenced selected psychological variables, risk taking and emotional intelligence compared to control group. Further it was also found aroma therapy significantly influenced selected psychological variables, of women players. The results further proved that music therapy combined with aroma therapy significantly influenced selected psychological variables, risk taking and emotional intelligence. The effect of isolated and combined treatments proved significantly altered risk taking and emotional intelligence and 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.

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