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Research Article

# Impact of Varied Forms of Therapeutic Recreation Program on Blood Pressure for the Students at University Level

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**Abstract**

The purpose of this study was to investigate how participation in a recreation program influences changes in blood pressure. A total of 87 students at University level who have been studying for 1-5 years volunteered for the study from Chennai, Tamilnadu were selected. The present study is an experimental one and to test the effects of varied intervening strategies, the care was taken in distributing the samples to each experimental group. A sample size of 45 was randomly selected out of 87 for the study in the age group between 18 and 25 years (22 ± 2.57). Subjects satisfied with the inclusion criteria were recruited for the study. After the initial screening for selection criteria, the experimental group was divided into two subgroups such as art therapy, (ATG), music therapy (MTG), and control group do not exposed to any experimental training other than their regular daily activities. A mixed ANOVA and post-hoc test was administered. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study. Art and music based activities can represent a valid and without side effects intervention for reducing blood pressure.

**Keywords:** Art Therapy, Music Therapy, Blood Pressure, University Students.

## Introduction

Therapeutic recreation is the practice of employing recreational activities to help people improve their physical, mental, and social behavior in a more positive manner (1). Physical activities, music, dance, arts and crafts, social activities, and nature and outdoor activities are all examples of therapeutic recreation (2). Furthermore, therapeutic recreation programs differ from leisure recreational activities in that therapeutic recreation is a specific application of recreation that intervenes with a defined objective and follows a systematic philosophy, technique, and process (3).

Therapeutic recreation involves people participating in scheduled recreation and comparable experiences in order to improve their functioning, health and well-being, and quality of life, all while concentrating on the individual as a whole and the changes that must be made in their living environment (4,5). Therapeutic recreation programs are critical in meeting a person's needs while also achieving the goal of health protection and promotion (6,7,8). According to epidemiological studies, higher levels of physical activity or fitness are linked to lower blood pressure (9). Blood pressure has been found to be reduced by exercise training (10-15). Therefore, the purpose of this study was to investigate how participation in a recreation program influences changes in blood pressure.

## Methodology

### Selection of Subjects

A total of 87 students at University level who have been studying for 1-5 years volunteered for the study from Chennai, Tamilnadu were selected. The present study is an experimental one and to test the effects of varied intervening strategies, the care was taken in distributing the samples to each experimental group. A sample size of

45 was randomly selected out of 87 for the study in the age group between 18 and 25 years (22 ± 2.57). Subjects satisfied with the inclusion criteria were recruited for the study.

**Inclusion criteria**

1. The students between 18 to 25 age groups only were included.
2. Students were given a form of consent to know the willingness and included to participate in this investigation.
3. Blood pressure was the only outcome of interest.

**Exclusion criteria**

1. Those who had personal problems as per their statement in their registration were excluded.
2. Subjects suffering from asthma, eye sight problems and anxiety problem were excluded from the study.
3. Studies which did not provide blood pressure data were excluded.

**Experimental Design**

After the initial screening for selection criteria, the experimental group was divided into three subgroups such as art therapy (22), (ATG), music therapy (MTG), and control group do not exposed to any experimental training other than their regular daily activities.

**Statistical Analysis**

A mixed ANOVA and post-hoc test was administered. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

**Results**

**Table 1.**
**Mixed design ANOVA on systolic blood pressure**

| Source | Sum of Squares | df | Mean Squares | Obtained 'F'-ratio | Sig. |
|---|---|---|---|---|---|
| Test | 31.90 | 1 | 31.90 | 62.80* | .000 |
| Test*Group | 19.267 | 2 | 9.63 | 18.96* | .001 |
| Error | 21.333 | 42 | 0.50 | -- | -- |

* Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 42 is 3.21.

The mixed model ANOVA revealed that the main effect of test in systolic blood pressure was significant ($F(1, 42) = 62.80$, $p < .001$) in the predicted direction. There was a significant interaction between systolic blood pressure and training groups ($F(2, 42) = 18.96$, $p < .001$). The Sig. column reveals probabilities for both the main effect (.000) and the interaction (.001) are both less than 0.05, so we can conclude that these are both significant effects. Mixed ANOVA is an omnibus test statistic and cannot tell which specific groups within each factor were significantly different from each other. Hence simple main effect and post hoc test was computed.

**Table 2.**
**The simple effect test scores on systolic blood pressure**

| Test | Hypothesis DF | Error DF | Obtained F-Ratio | Sig |
|---|---|---|---|---|
| Group Within Pre Test | 2 | 42 | 1.52 | .290 |
| Group Within Post Test | 2 | 42 | 18.17* | .002 |
| Test Within ATG | 1 | 42 | 62.24* | .001 |
| Test Within MTG | 1 | 42 | 36.73* | .001 |
| Test Within CG | 1 | 42 | 0.51 | .417 |

Table above shows that F-ratio values obtained for group within post test, test within ATG and test within MTG were 18.17, 62.24 and 36.73 respectively, which were greater than the table value of 3.21 with df 2 and 42, 4.07 with df 1 and 42 required for significance at 0.05 level of confidence. There was no significant difference found on group within pre test and test within CG. It indicated that there was no significant difference between groups at baseline and control group did not change over time.

**Table 3.**
**Scheffe's test of group within post test for systolic blood pressure**

| Adjusted Post-test means | | | Mean Difference | Required CI |
|---|---|---|---|---|
| ATG | MTG | Control Group | | |
| 119.55 | 118.23 | --- | 1.32* | 0.65 |
| 119.55 | --- | 121.07 | 1.52* | |
| --- | 118.23 | 121.07 | 2.84* | |

*****significant at 0.05level

The mean differences for systolic blood pressure between ATG and MTG, ATG and CG, MTG and CG were 1.32, 1.52 and 2.84 respectively which was greater than the CI value 0.65. Hence there exists significant difference between the groups.

**Figure 1.**
**Profile plots on systolic blood pressure**

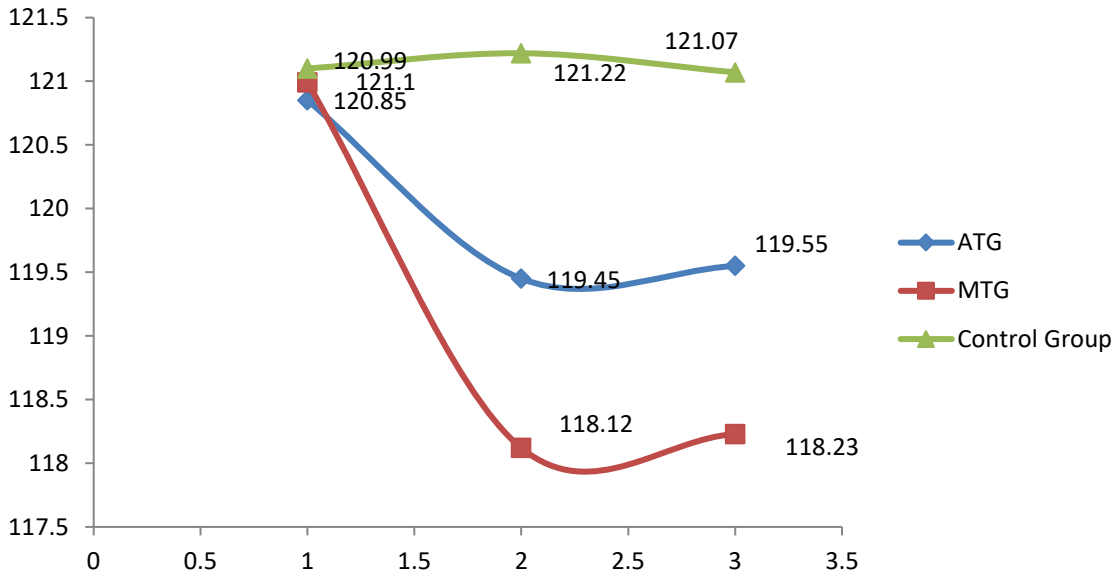



**Table 4.**
**Mixed design ANOVA on diastolic blood pressure**

| Source | Sum of Squares | df | Mean Squares | Obtained 'F'-ratio | Sig. |
|---|---|---|---|---|---|
| Test | 32.90 | 1 | 32.90 | 32.33* | .001 |
| Test*Group | 18.26 | 2 | 9.13 | 8.97* | .001 |
| Error | 42.73 | 42 | 1.01 | -- | -- |

* Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 42 is 3.21.

The mixed model ANOVA revealed that the main effect of test in diastolic blood pressure was significant ($F(1, 42) = 32.33$, $p < .001$) in the predicted direction. There was a significant interaction between diastolic blood pressure and training groups ($F(2, 42) = 8.97$, $p < .001$). The Sig. column reveals probabilities for both the main effect (.001) and the interaction (.001) are both less than 0.05, so we can conclude that these are both significant effects. Mixed ANOVA is an omnibus test statistic and cannot tell which specific groups within each factor were significantly different from each other. Hence simple main effect and post hoc test was computed.

**Table 5.**
**The simple effect test scores on diastolic blood pressure**

| Test | Hypothesis DF | Error DF | Obtained F-Ratio | Sig |
|---|---|---|---|---|
| Group Within Pre Test | 2 | 42 | 0.63 | .513 |
| Group Within Post Test | 2 | 42 | 11.50* | .001 |
| Test Within ATG | 1 | 42 | 25.92* | .001 |
| Test Within MTG | 1 | 42 | 31.41* | .001 |
| Test Within CG | 1 | 42 | 0.51 | .428 |

Table above shows that F-ratio values obtained for group within post test, test within ATG and test within MTG were 11.50, 25.92 and 31.41 respectively, which were greater than the table value of 3.21 with df 2 and 42, 4.07 with df 1 and 42 required for significance at 0.05 level of confidence. There was no significant difference found on group within pre test and test within CG. It indicated that there was no significant difference between groups at baseline and control group did not change over time.

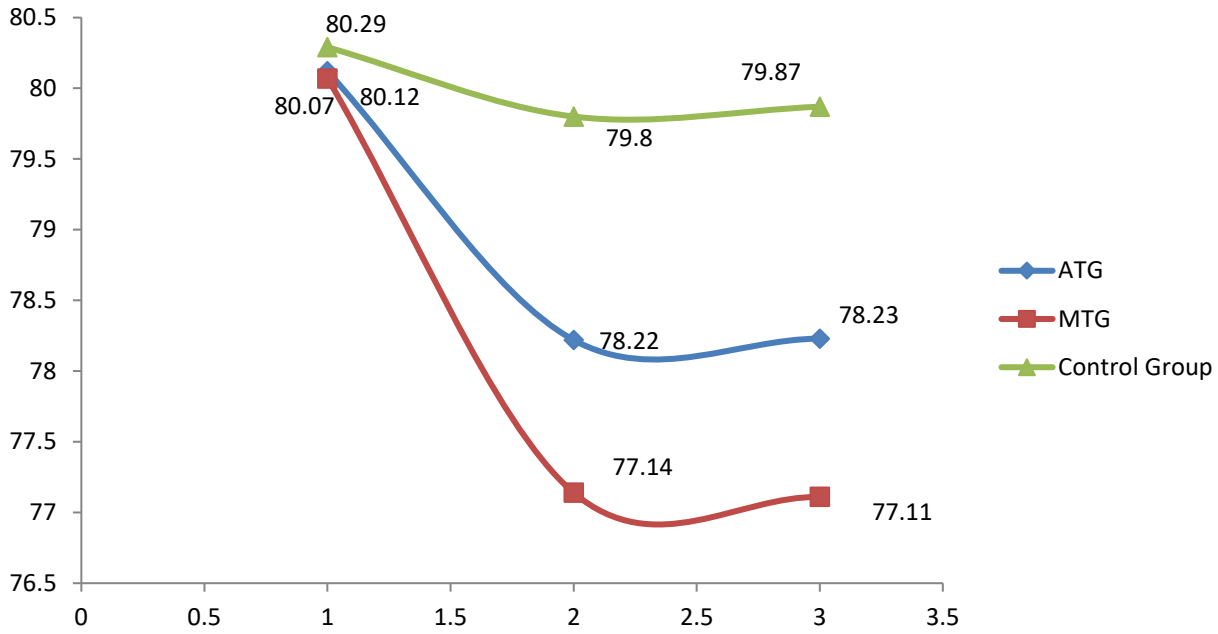
**Table 6.**
**Scheffe's test of group within post test for diastolic blood pressure**

| Adjusted Post-test means | | | Mean Difference | Required CI |
|---|---|---|---|---|
| ATG | MTG | Control Group | | |
| 78.23 | 77.11 | --- | 1.12* | 0.93 |
| 78.23 | --- | 79.87 | 1.64* | |
| --- | 77.11 | 79.87 | 2.76* | |

*****significant at 0.05level

The mean differences for diastolic blood pressure between ATG and MTG, ATG and CG, MTG and CG were 1.12, 1.64 and 2.76 respectively which was greater than the CI value 0.93. Hence there exists significant difference between the groups.

**Figure 2.**
**Profile plots on diastolic blood pressure**




**Discussion on Findings**

The purpose of this study was to determine the effectiveness of therapeutic effects on the blood pressure response. Increase in mean values of blood pressure in test 2 (post test) in group I and II after 12 weeks compared to the initial value, and was statistically highly significant. There is significant difference in art therapy and music therapy with CG ($P < 0.05$). This study confirmed that the therapeutic recreation program enabled changes in blood pressure. This indicates that the therapeutic recreation intervention led to an increase in physical activities of the experimental group and thus to improved healthy behaviour. This is important, as therapeutic recreation can generate active lifestyles within the student community, counteracting a sedentary and unhealthy life. This finding is consistent with those of other studies (16-19).

**Conclusion**

1. Therapeutic recreation program is effective in bringing positive changes to the blood pressure.
2. The time and the duration of the program have an influence on the program effectiveness, and the higher the duration and time, the higher the effect.
3. Musical therapy is shown to be better in reducing blood pressure.

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