

# A STUDY ON EFFECT OF MUSIC ON BLOOD PRESSURE AND HEART RATE

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**ABSTRACT:** - This research aimed to observe the effect of music on blood pressure and heart rate. A sample of 30 people was recruited through convenient sampling. Experimental (cross over design) research is used as treatment is applied on the participants more than two times. Soothing music and soft rock music (lyrical and instrumental) is used in this research. Blood pressure monitor is used for taking the readings. Data collected through these variables and measures were analyzed and reported. Calculation was done using the one-way-ANOVA and by applying the t-test on the collected data. It was assumed that listening to the soothing music will reduce blood pressure and pulse rate as compared to the soft rock music, and listening to the instrumental music rather than the vocal music will reduce the pulse rate and blood pressure. But the test result showed no significant difference in blood pressure and heart rate after making them listening the pre-decided music. We compared resting levels of heart rate and mean arterial pressure to all types of music through T-tests. Our results indicated no significant differences in heart rate or blood pressure.

Keywords: -Music, Vocal Music, Instrumental Music, Blood Pressure, Heart Rate

## I. INTRODUCTION

This research is aimed to examine the effect of music listening on physiological factors. In this research we are using soft rock music, soothing music (instrumental and lyrical) and blood pressure, heart rate as the variables. More about this research is defined below:-

One might assume that the body of research, specifically physiological responses to music, is tremendous; however, it is surprisingly limited. While some scientific fields (neurology and psychology) have provided some foundations in this area, I intended to build upon the areas that they have not addressed. My research seeks to connect the physiological responses (BLOOD PRESSURE and PULSE RATE) to music as opposed to investigating each variable separately. By doing so, we may be able to interpret other factors at play during the process of listening to music.

### 1.1 SOOTHING MUSIC

Soothing music can make a person feel comfortable, calm. This type of music can refresh someone's mood. It can make moderate, mollify, or relieve the stress or uncertainty, this type of music also make calm and soothe the tanned skin.

### 1.2 SOFT ROCK MUSIC

This kind of music (lite rock) is a subgenre of popular music that to a great extent includes acoustic guitars and ease back to-mid tempos. Originating in the mid 1970s in southern California, the style covered up the edges of vocalist lyricist and pop, depending on straightforward, melodic tunes with huge, lavish preparations. Delicate shake commanded radio all through the 1970s and in the long run transformed into the incorporated music of grown-up contemporary in 1980's (Simpson, 1980's).

### 1.3 INSTRUMENTAL MUSIC

An instrumental is a musical composition or recording without lyrics, or singing, even though it might include some speechless vocals, such as shouted backup vocals in an astronomically immense band setting. The music is primarily or exclusively engendered by musical instruments. An instrumental can subsist in music notation, after it is indicated by a composer; in the mind of the composer (especially in cases where the composer himself will perform the piece, as in the case of a blues solo guitarist or a folk music fiddle player); as a piece that is performed live by a single instrumentalist or a musical group which could range in size from a duo or trio to an astronomically immense Astronomically Immense Band, concert band or orchestra. Performers), the section may be called a "solo" (e.g., the guitar solo that is a key section of heftily ponderous metal music and hard rock musical compositions). If the

instruments are percussion instruments, the interlude can be called a percussion interlude or "percussion break". These interludes are a form of break in the musical composition.

#### 1.4 LYRICAL MUSIC

A musical composition having the form and musical quality of a musical composition, and especially the character of a songlike outpouring of the poet's own noted conceptions and feelings, as distinguished from epic and dramatic poetry. It is characterized by an expressing spontaneous or these contain the direct feelings. These songs express strong feelings of the person. This is one of the emotional ways to express emotions using some words. The words of a musical composition are called lyrics. Lyrics can include a series of verses, the longer sections of the musical composition that tell the story, and a short phrase reiterated at the termination of every stanza. Musical compositions can have a simple structure of one or two verses. Musical compositions conventionally have a beat. Whether you sing or verbalize the lyrics, you can feel a pattern or pulse in the way the words move the musical composition forward.

#### 1.5 PHYSIOLOGICAL FACTORS

This was the short information about the research and this whole information was collected from the following researches. These are mentioned below :-

**a) BLOOD PRESSURE (BP):** It is the pressure of circulating blood on the walls of blood vessels. "Blood pressure" generally refers to the pressure in large arteries of the systemic circulation. Your heart directs blood round your body to give it the vitality and oxygen it requires. As the blood moves, it pushes against the sides of the veins. Circulatory strain is measured in 'millimeters of mercury' (mmHg) and is indicated as two numbers. For instance, if you're perusing is 120/80mmHg, your pulse is '100 more than 60'. The first (or best) number is your systolic pulse. The second (or base) number is your diastolic pulse.

#### b) HEART RATE

The number of heartbeats per unit of time, more often than not every minute. The heart rate depends on the quantity of withdrawals of the ventricles (the lower assemblies of the heart). The heart rate might be too quick (tachycardia) or too moderate (bradycardia). The beat is regularly taken at the wrist to assess the heart rate. The pulse is a bulge of an artery from waves of blood that course through the blood vessels each time the heart beats.

### 2. REVIEW OF LITERATURE

Jaymie Thorne, Jenny Shannon, Crystal Spencer CU Boulder, Fall 2002 did a study on Effect of music on blood pressure and heart rate and they could not able to prove the effect of music on blood pressure and heart rate.

Another study was done in 16th July 2015 Sundari, Ramesh, Ananraj observe the effect of relaxing music on diastolic, systolic blood pressure and on pulse rate in Hospitalized on pre-hypertensive pregnant women in the third trimester of pregnancy. The BP lowering effect of relaxing music heedfully aurally perceiving is more dominant for systolic BP. Receptive music therapy seems to be safe in enceinte women.

"Robert F. Potter" in 1998 did a study on Effects of Music on Physiological Arousal: Explorations into Tempo and Genre and the researcher concluded that Skin conductance response (SCR) frequency was greater during music processing than during silence. Skin conductance level (SCL) data showed that fast-paced music elicits greater activation than slow-paced music. Genre significantly interacted with tempo in SCR frequency, with faster tempo increasing activation for classical music while decreasing it for rock music.

In Bartlett's (1996) audit of music thinks about utilizing physiological measures, a larger part of studies measuring muscle strain discovered unwinding music to lessen it. Strikingly, somewhat the greater part of the examinations that deliberate skin temperature found unwinding music to build it.

Pelletier (2004) went past evaluating contemplates exclusively, directing a factual meta-investigation of 22 tests. Conclusions demonstrated that music alone, too as utilized as a part of pair with unwinding systems, essentially diminished saw excitement what's more, physiological actuation.

A similar report by Iwanaga and Youko (1999) exhibited that tuning in to music decreases patients' uneasiness pre-surgery as measured by their systolic circulatory strain and heart rate. It was in like manner found that particular sorts of music, like fast and direct beats, successfully influence physiological estimations in the midst of work out.

Trappe (2010) found that patients with tension, torment, stretch, depressive disorders, and restlessness will profit the most from tuning in to established music as it caused both heart rate and circulatory strain to diminish.

Davis-Rollans and Cunningham, 1987; Robb, Nichols, Rutan, and Bishop, et al., 1995; Strauser, 1997; see Standley, 1991 for survey or that show tuning in to unwinding music yields higher saw excitement contrasted with the nonattendance of music.

Schäfer and Sedlmeier (2009) gathered 17 elements of music from the writing and discovered capacities identified with the administration of state of mind and excitement and additionally self-related capacities to be the ones that individuals exceedingly attribute to their most loved music.

This all is about the brief information about this research and about the previous researches related to this research. These researches help the researcher to conduct this research. Further this paper continues about the objectives, hypothesis, tools, research design, and also about the procedure of this research.

### **Objectives of the research**

The research aimed to examine the effect of music listening on blood pressure and heart rate. Specifically, it determined the effect of lyrical and instrumental music as well as soothing and soft rock music on taken physiological variables.

### **Hypothesis**

Listening to the soothing music will reduce blood pressure and heart rate as compared to the soft rock music.

Listening to the instrumental music rather than the vocal music will reduce the pulse rate and blood pressure. A sample of 30 people was recruited through convenient sampling.

## **3. METHOD**

### **3.1 Research Design**

This research design utilized experimental design (cross over design). In cross over design the subjects are exposed with different treatments in different time. It is a type of repeated measurement design.

### **3.2 Sampling**

Convenience sampling is done. It is a type of non-probability sampling technique as researcher has selected the subjects according to her convenience. 30 samples were taken 18 subjects were the females and 12 were the males. Age range of the samples was about 15-45.

### **3.3 Measures**

*Blood Pressure Monitor* - It a digital blood pressure and heart rate measuring machine. Blood pressure indicates how hard blood is pushing against the walls of arteries. There are three readings when we measure it. First is systolic blood pressure whose optimal reading is about 120 mmHg, second is of diastolic blood pressure whose optimal reading is about 80mmHg. Third reading was of pulse rate and the optimal reading for pulse rate is between 60 and 100 beats per minute (bpm).

- Dr. Morepan BP-02 blood pressure monitor I have used for my research. Non chargeable batteries are used in the device.

### **3.4 Analysis**

Analysis of data was done by calculating the mean of each reading and by applying t-test and one-way-ANOVA.

### **3.5 Procedure**

Total 30 subjects through convenient sampling were taken then subjects were taken to experimental settings. Subjects were made comfortable with proper lights and sitting arrangements.

### **3.6 Instructions**

- They were briefed about the purpose of this study and about the tools being used for collecting data.

- They were asked to focus on the music.
- They were asked to adjust the head phones according to their comfort.
- They were asked not to move their hand during measurement of blood pressure and pulse rate.
- They were asked to close their eyes during listening of music.

The procedure was done in two parts in first part the readings were taken four times from each subject. First reading was taken without any music .Second reading was taken after a song “humsafar lyrical” (soothing lyrical), third reading was taken after a song “3 peg” (soft rock song), forth reading was taken after repeating the first song to check the real effect of soothing over rocking song. In second part the same procedure is repeated but in second reading and forth reading song is changed “humsafar instrumental”. After taking readings of 30 people then mean of each 24 group is calculated separately. Then we integrate the groups in 6. And one-way-ANOVA is calculated for each group but the researcher not found any significant values. Then t-test is calculated in which researcher get only one significant value.

**4. RESULTS**

“A one-way ANOVA was conducted to compare the effect of (IV) music on (DV) Blood pressure and pulse rate in soothing music, soft rock music, instrumental music and no music conditions.

**Table 1:** Systolic blood pressure group for lyrical music (one-way-ANOVA)

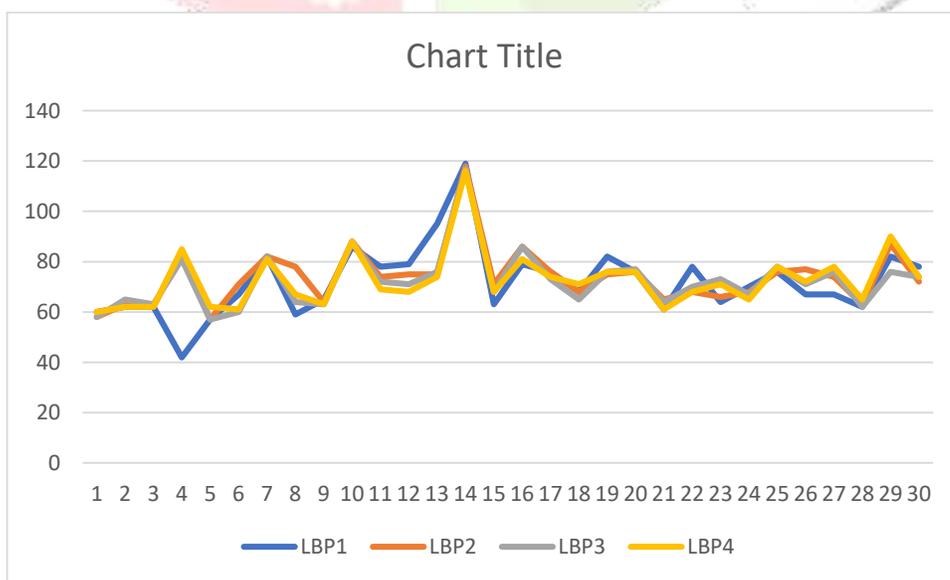
Source of variance	Df	SS	MS	F
Between group	3	57112.99	19037.6	25.40*
Within group	116	86939	749.47	

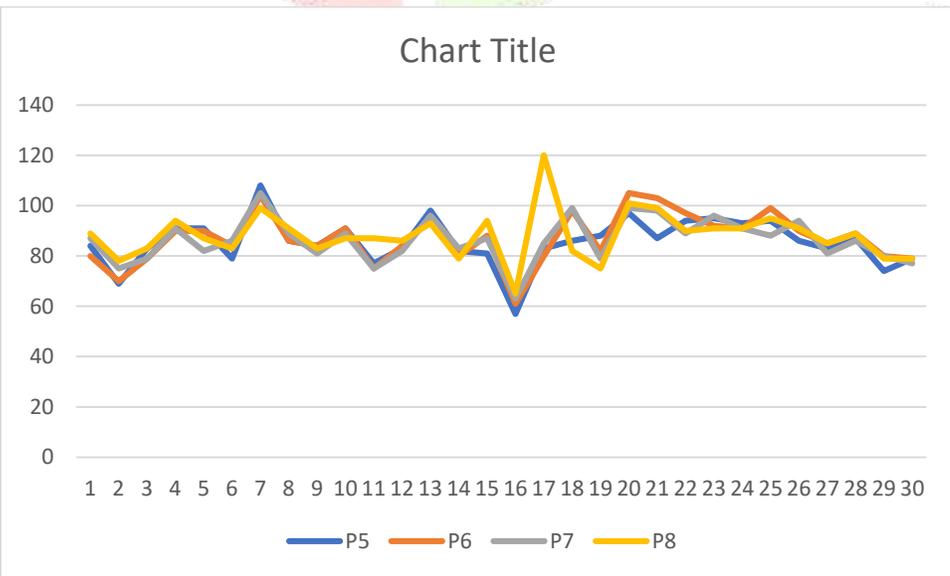
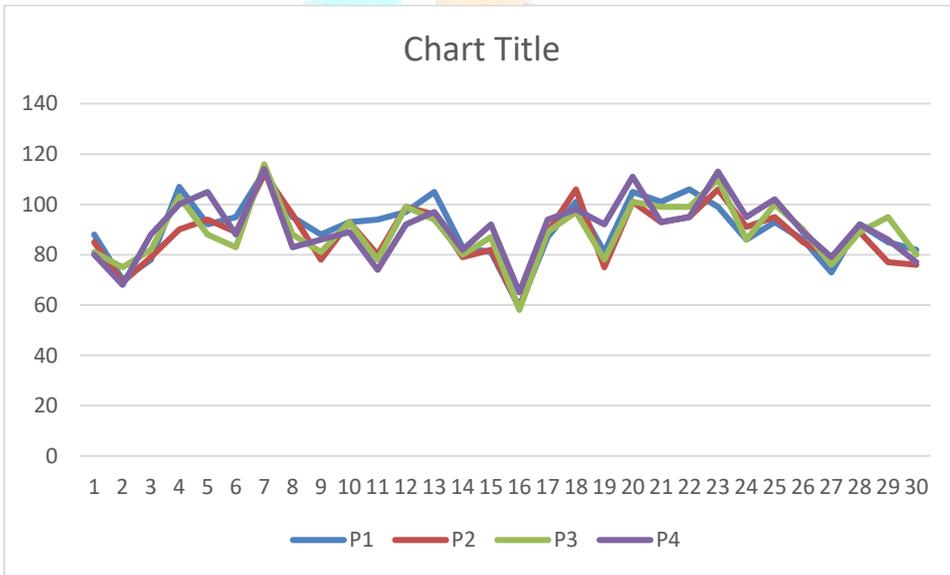
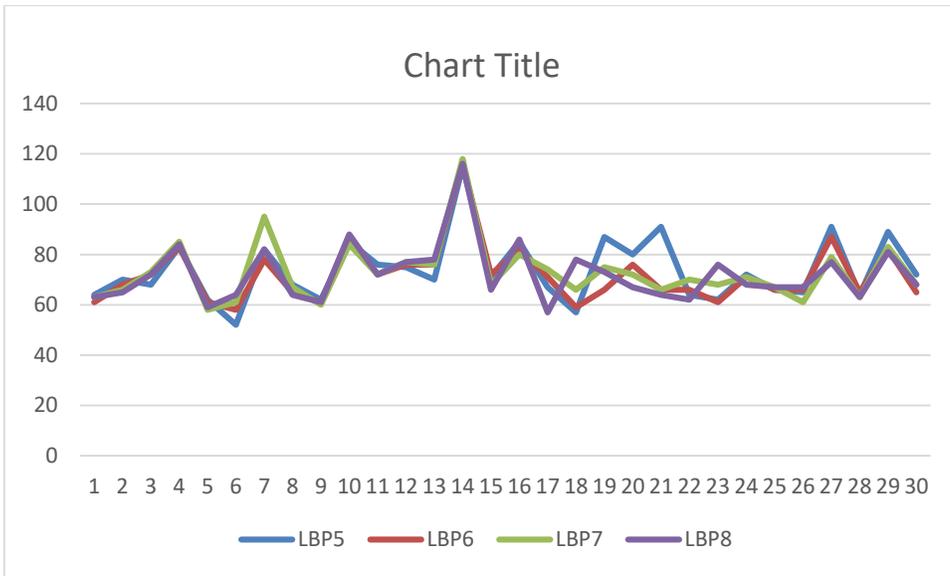
P<0.01

**Table 2:** Pulse rate for without music and humsafar lyrical (t-test)

Variables	df	T
Pulse rate without any song	29	2.39
Pulse rate after humsafar lyrical		

P<0.05





## 5. Discussion

This research aimed to examine the effect of music on blood pressure and Heart rate. Specifically, it determined the effect of lyrical and instrumental music as well as soothing and soft rock music on taken physiological factors. In this research the assumption was listening to the soothing music will reduce blood pressure and heart rate as compared to the soft rock music and Listening to the instrumental music rather than the vocal music will reduce the pulse rate and blood pressure. Here the independent variable was “music”, Music's interconnection with society can be visually perceived throughout history. Every kenneled culture on the earth has music. The dependent variable was the blood pressure and the heart rate. Ideal circulatory strain commonly is characterized as 120 mm Hg for systolic and 80 mm Hg for diastolic which is the weight as your heart unwinds our resting heart rate, the normal heart rate for the resting heart is between 60-100 beats per minute (bpm). There was an investigation by Jaymie Thorne, Jenny Shannon, Crystal Spencer CU Boulder, Fall 2002 on Effects of music on blood pressure, heart rate, and they concluded that there is no significant effect. The present research was conducted on 30 people with convenient sampling. The data was collected in two parts in each part blood pressure and heart rate were measured four times. In first part lyrical music was used and in second part instrumental music was used and soft rock music used in both the parts. After collecting the readings, mean is calculated and ONE WAY ANOVA is applied on the readings, but only the value of systolic blood pressure was found significant. It can be a chance factor or may be the research design was not proper.

## 6. Conclusion

We concluded that there is no significant effect of Lyrical, Instrumental, or Soft rock music on blood pressure and heart rate. The findings could be affected because of less sample size, less time interval between treatments or because of sample size or convenient sampling. This research can be continued with a proper research design.

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