

Nursing

Music as Therapy

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Problem

Many studies suggest that music has a positive effect on a patient's physiological state in lowering blood pressure and heart rate, respiratory rate after surgery, while in pain, or in times of stress. Music has also been shown to affect psychological state in reducing depression related to chronic pain. However, it is not known how music affects the physiological state in returning to baseline faster after physical activity compared to not listening to music at all.

Purpose

The purpose of the study was to determine the effect of music on the return of physiological responses, including heart rate and blood pressure, to baseline, following physical activity.

Significance

Benefits to returning heart rate and blood pressure to baseline include preventing over-exhaustion of the heart and decreasing oxygen demand. Music therapy can be an inexpensive, non-pharmacological way to reduce physiological responses. Therefore, it was proposed that results from this study could support the use of music therapy by nurses to relax patients when heart rate and blood pressure are elevated in times of stress or anxiety and without the use of pharmaceutical interventions.

Theoretical Framework

The theoretical framework for this research was guided by Katharine Kolcaba's Comfort Theory (2011). This theory described comfort in three forms: relief, ease, and transcendence. This theory provided a framework to determine if music could be used as an intervention to achieve relief, ease and transcendence in patients, in any situation in which there was an increase in blood pressure and heart rate due to anxiety, pain, or stress.

Review of Literature

Several studies have been conducted to determine the effects of music on patients'

various situations such as: anxiety, maternal labor, post-surgical procedures, etc. All of these situations included patients with increased blood pressure and heart rate. As a patient listens to music, he or she will relax and the music will minimize the discomfort and fatigue the body feels, while also improving the mood of the patient (Murrock& Higgins, 2009.) However, these studies did not look at how the introduction or tempo of music, affected the return of these physiological responses to baseline.

In a study conducted by Nilsson (2009), music was used as therapy on patients who underwent open coronary bypass (CABG) or aortic valve replacement surgery. Researchers found that based on information gathered, those who listened to music had faster relaxation time than those who did not listen to music. A major nursing consideration for postoperative patients is to reduce stress and expense, as well as lessen their use of pharmacological therapies or interventions.

A study conducted on first-time mothers looked at whether or not music was effective at decreasing the pain level and anxiety during the latent and active stages of labor (Liu, Chang, Chen, 2009). Researchers found that 63% of patients reported that music was very helpful during labor as a whole. However, the results demonstrated that music was more effective during the latent phase rather than the active phase when labor is more intense and painful.

Also, in a study conducted by researchers Mei-Feng Lin, Ya-Ju Hsieh, Yu-Yun Hsu, Susan Fetzerm and Mei-Chi Hsu (2010), music therapy and verbal relaxation were examined as external influences on patients with chemotherapy-induced anxiety. The researchers found that music therapy had a more encompassing positive effect on anxiety after chemotherapy than did control groups and verbal relaxation (Lin et al. 2010). Results found that music therapy “demonstrated the ability to reduce state anxiety in the music therapy and verbal relaxation better than no music” (Lin et al. 2010). These researchers concluded that oncology nurses should provide “music as an adjuvant intervention to reduce chemotherapy-induced anxiety and enhance the quality of care” (Lin et al. 2010).

Hypothesis

Music will have a significant effect on reducing heart rate and blood pressure in athletes following physical exercise.

Setting

The study was conducted at the LaGrange College Henry Gymnasium on the LaGrange College campus.

Study design

A quasi-experimental design was used for this study; music was the form of treatment. One group composed equally of males and females received the intervention of music therapy while the control group received no music therapy.

Data was collected from both groups on three separate occasions, at the same location.

Sampling Procedure & Characteristics

The subjects in this study were selected by means of purposive sampling. The sample consisted of 30 volunteer student athletes (15 men and 15 women) from LaGrange College athletic programs. The volunteers ranged in ages from 18 to 22 years.

Data-collection strategies and instruments

Direct measures were used to collect data. Instruments consisted of a sphygmomanometer and a heart rate monitor. Each volunteer had his or her blood pressure and heart rate recorded, and ran on a treadmill for 10 minutes in order to increase heart rate and blood pressure. After running, blood pressure and heart rate were measured again. Each volunteer listened to either fast-tempo music, slow-tempo music, or no music. Blood pressure and heart rate were recorded before running on treadmill, immediately after completing the run, at 5 minutes, 10 minutes, and 15 minute intervals. iPods with pre-selected music containing fast-tempo and slow-tempo music were used after running in order to determine final analysis of which intervention would more significantly affect returning blood pressure and heart rate to baseline.

Plans for retrieving, storing, and analyzing data

At each session, each volunteer had blood pressure and heart rate recorded before and after running on the treadmill for 10 minutes, as well as, at intervals of 5, 10, and 15 minutes of listening to music and not listening to music. Subjects were asked their age and confirmed their involvement in an athletic program with Lagrange College. The information was recorded in a binder and then stored in a locked filing cabinet in one of the researcher's rooms. The ordinal data was analyzed to determine which intervention affected the measured physiological responses to return to baseline faster. All data gathered was destroyed upon completion of the study.

Ethical Considerations

In order to protect the subjects' rights, they read and signed an informed consent that explained the procedures of the study. No personal information was shared nor was anyone outside of the study made aware of their participation unless disclosed by the subject. Subjects were also made aware that their participation was strictly on a voluntary basis. They could withdraw from the study at any time with no consequences for withdrawing.

Timetable

Planning for this study was initiated in September 2012. The proposal was

submitted to the Lagrange College Institutional Review Board in December 2012. Data was collected during the months of February through April of 2013 and final results were analyzed and presented in May 2013.

Budget and Statement of Resources

This study required the use of blood pressure cuffs, heart rate monitors, watches, and treadmills. Treadmills were available through the Lagrange College Athletic Center in the Henry building. Blood pressure cuffs, watches, and music were the researcher's personal equipment. Data collectors received the same training in monitoring and recording heart rate and blood pressure. The cost of this study was minimal and was covered by the researchers.

Study Findings

The Statistical Package for the Social Sciences program was used to analyze the data collected for this study. Results indicated that the overall heart rate pattern was the same regardless of music; however there was no significance between heart rate and type of music ($\alpha = .778$) as indicated by the $P = .252$. Results for systolic blood pressure indicated that the pattern was the same regardless of music however there was no significance and difference between systolic blood pressure and type of music ($\alpha = .795$) as indicated by the $P = .230$. Results for overall diastolic blood pressure indicated that the pattern was the same regardless of music however there was no significance and difference between diastolic blood pressure and type of music ($\alpha = .672$) as indicated by the $P = .399$.

Conclusions

Based on the data collected, exercise did have a positive effect on increasing heart rate and blood pressure followed by the expected decrease after exercise. However, type of music did not directly influence the decrease in heart rate and blood pressure in the given amount of time. Therefore, results may change under different circumstances. Although no statistically significant differences were found in this study, the use of music therapy on people with health issues may make a difference in lowering heart rate and blood pressure.

Implications for Nursing Care

It is important to understand the significance of a non-pharmacological approach in nursing care. The use of music could allow nurses to assist in lowering pain, heart rate, or blood pressure stimuli without the use of medications prescribed by physicians in certain patient situations. This would increase a more holistic approach to healthcare while encouraging more patient centered care. Athleticism and age could have played a significant role in the results. Further studies need to be conducted on less healthy individuals in a more controlled environment, and with larger samples.

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