



**IMPORTANCE OF
PRESCRIPTION OF
“MUSIC MEDICINE”
IN ICU**

**Dr Punit D. Ghetia
Consultant Intensivist
Bankers Heart Institute**

MUSIC THERAPY IN ICU

HOSPITAL CHRONICLES 2013, 8(2): 78–85

ARTICLE

The Role of Music to Promote Relaxation in Intensive Care Unit Patients

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Is there a role for music in the ICU?

[Jeffrey D DellaVolpe](#)  and [David T Huang](#)

Critical Care 2015 19:17 | DOI: 10.1186/s13054-014-0663-1 | © DellaVolpe and Huang; licensee BioMed Central. 2015

Published: 16 January 2015

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Music therapy in critical care: indications and guidelines for intervention



L Chlan and MF Tracy



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HOME

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NEWS

BLOGS

CME

SUMMARY AND COMMENT | GENERAL MEDICINE, HOSPITAL MEDICINE

 PRACTICE CHANGING

June 18, 2013

Music Therapy in the ICU — Another Way to Lower Sedation Use?

Patricia Kritek, MD reviewing Chlan LL et al. JAMA 2013 Jun 12. Azoulay E et al. JAMA 2013 Jun 12.



BACKGROUND:

The intensive care unit (ICU) is one of the **most stressful environments for patients with a wide range of stressors** among various clinical settings in a hospital.

It is thought **that music can act as a nursing intervention to relieve both physiological and psychological responses and increase comfort of patients.**



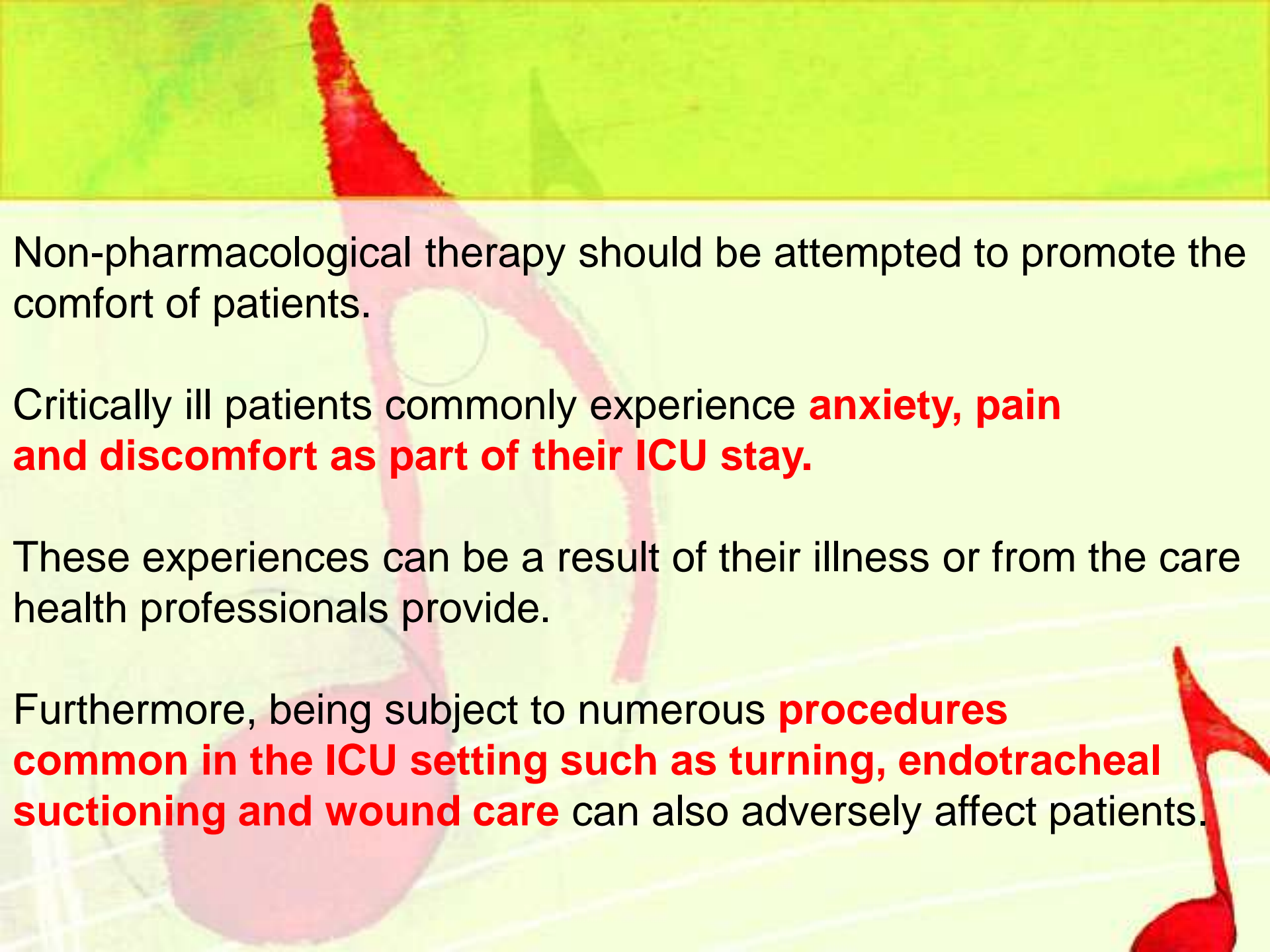
INTRODUCTION

ICU patients are not only compromised by illness but also faced with a **wide range of stressors, such as experience of pain, unfamiliar environment, insomnia, fear, threat of death and loss of interaction with family and friends.**

Increased stress activates the sympathetic nervous system, as manifested by an increased heart rate (HR), blood pressure (BP) and respiratory rate (RR), possibly leading to a **destructive anxiety syndrome.**

Patient in ICU with wide range of stressors





Non-pharmacological therapy should be attempted to promote the comfort of patients.

Critically ill patients commonly experience **anxiety, pain and discomfort as part of their ICU stay.**


These experiences can be a result of their illness or from the care health professionals provide.

Furthermore, being subject to numerous **procedures common in the ICU setting such as turning, endotracheal suctioning and wound care** can also adversely affect patients.



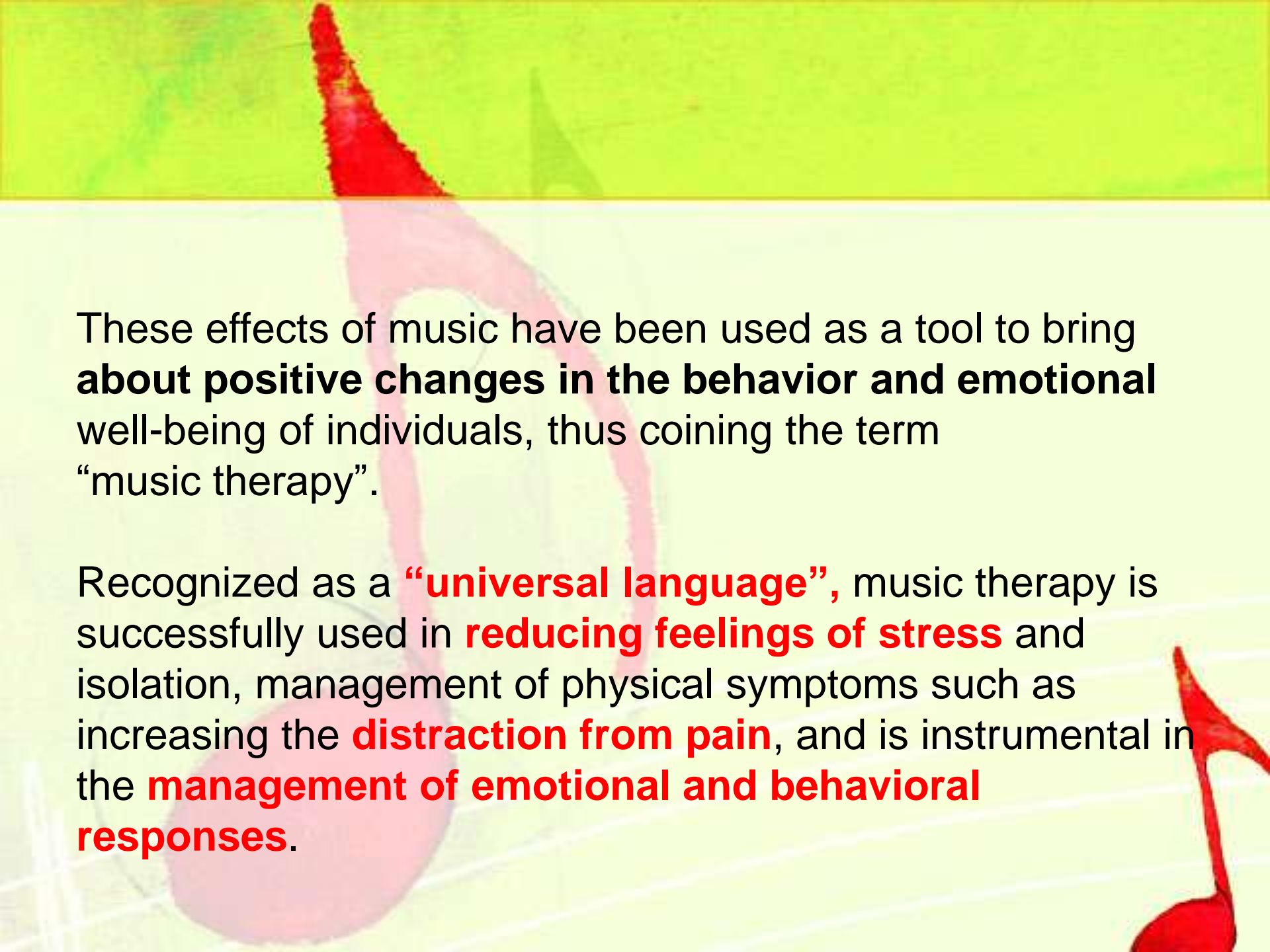
Discomfort and anxiety have the potential to **lengthen ventilator weaning time** and ultimately lengthen ICU stay.

The pain associated with these procedures can result in a number of **negative stress sequelae** for patients that can be detrimental to their health and well-being.



Music therapy has been widely used in a variety of cultures for centuries **to decrease patients' perception of pain, anxiety and depression, and boost their feelings of relaxation.**

It is thought that music therapy can act as a nursing intervention to **relieve both physiological and psychological responses and increase comfort of patients.**



These effects of music have been used as a tool to bring **about positive changes in the behavior and emotional well-being** of individuals, thus coining the term “music therapy”.

Recognized as a **“universal language”**, music therapy is successfully used in **reducing feelings of stress** and isolation, management of physical symptoms such as increasing the **distraction from pain**, and is instrumental in the **management of emotional and behavioral responses**.



A TOUCH OF HISTORY

The use of music in relation to illness and health has been known since ancient history.

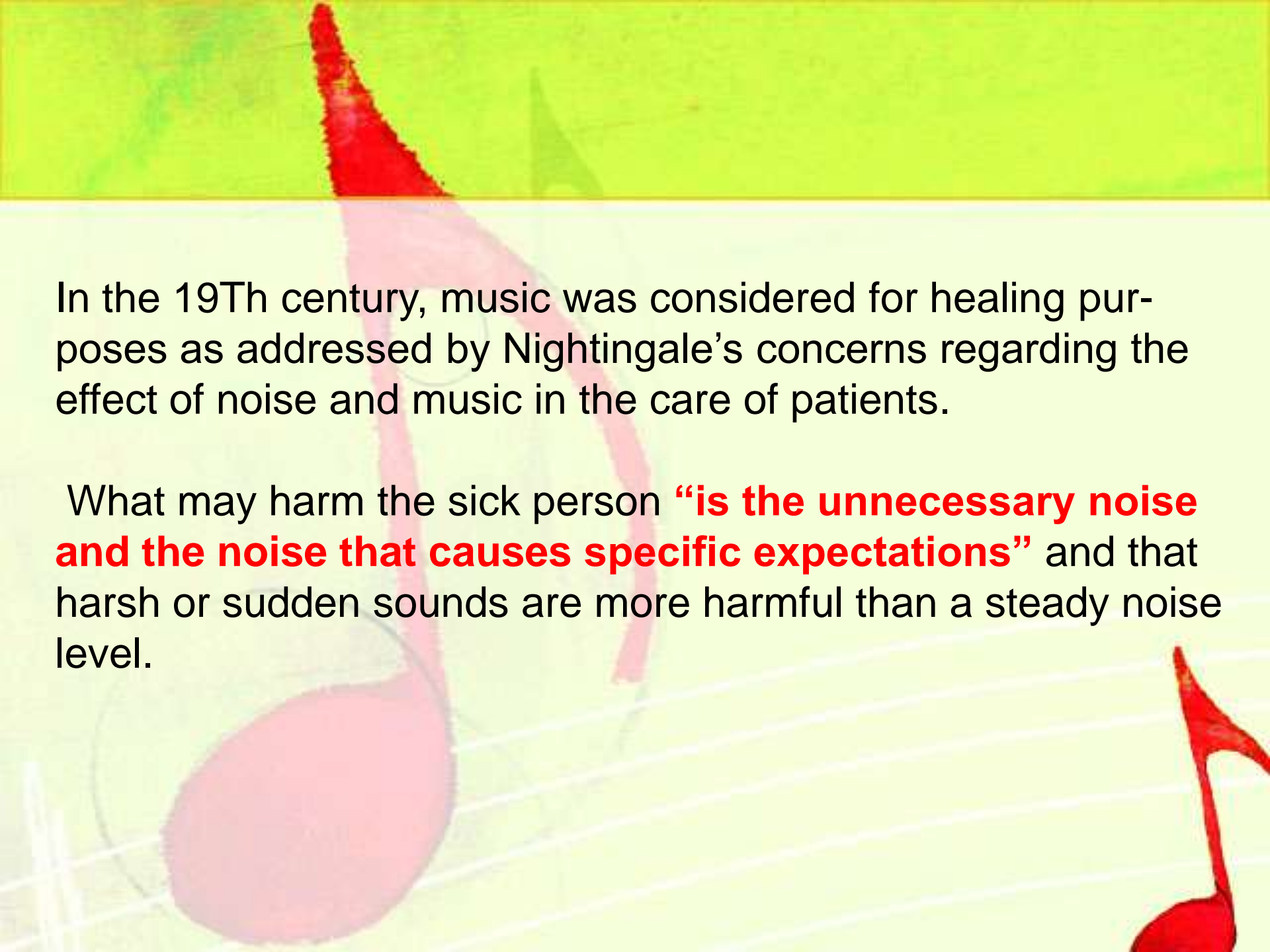
Pythagoras by dividing the monochord into simple ratios connected music, mathematics and medicine. Somatometry in nature follows mathematics of music and Pythagorean theories.

Plato was the first authorized music medicine prescriber in the history of medicine and he suggested **that we need musical rhythm to overcome our tension as humans and move into a diseased and non-ordered status.**



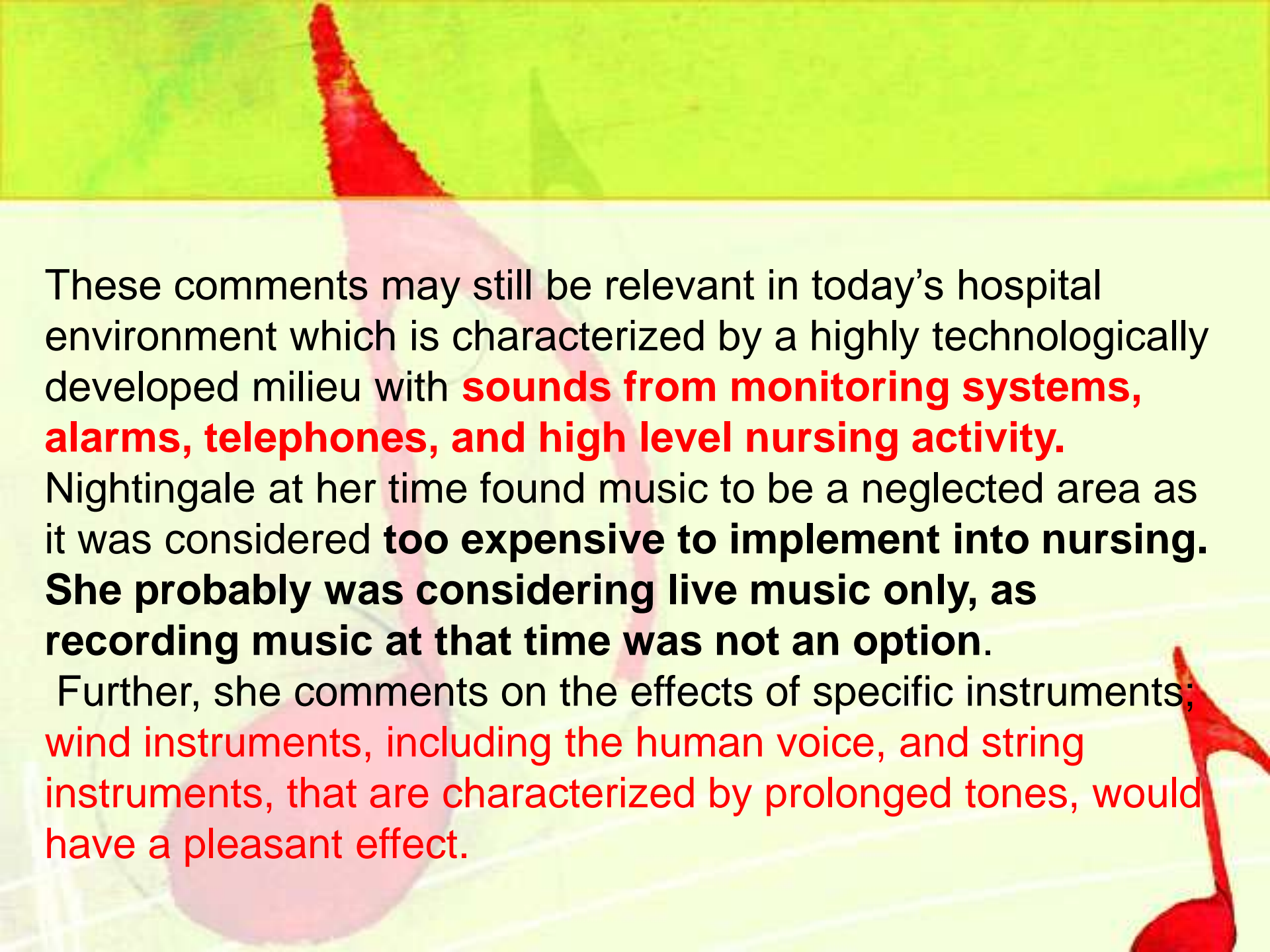
Aristotle suggested clearly in his work that **we can use music to alter various mood conditions** and suggested Mixolydian, Dorian and Phrygian **mode for different mood states**.

Hippocrates applied also music medicine. Shamans and medicine men of indigenous people have **used music, drumming, singing, and dancing to heal people**.



In the 19Th century, music was considered for healing purposes as addressed by Nightingale’s concerns regarding the effect of noise and music in the care of patients.

What may harm the sick person **“is the unnecessary noise and the noise that causes specific expectations”** and that harsh or sudden sounds are more harmful than a steady noise level.



These comments may still be relevant in today's hospital environment which is characterized by a highly technologically developed milieu with **sounds from monitoring systems, alarms, telephones, and high level nursing activity.**

Nightingale at her time found music to be a neglected area as it was considered **too expensive to implement into nursing.** **She probably was considering live music only, as recording music at that time was not an option.**

Further, she comments on the effects of specific instruments; **wind instruments, including the human voice, and string instruments, that are characterized by prolonged tones, would have a pleasant effect.**



In the **late 19 th century the first recorded music** was used in the hospitals as an intervention to diminish anxieties associated with surgery and it has been a growing field of development and research since after World War II, especially in the USA and in Germany.


Music therapy has risen to the challenge of research in recent years. Not only is there a tradition of quantitative research but qualitative research approaches have been also incorporated within the discipline as is **necessary for a clinical approach that involves science and art.**




THE USE OF MUSIC IN MEDICAL SETTINGS

Two different complementary approaches to the use of music in medical settings are distinguished and reported to be currently in practice, music medicine and music therapy.

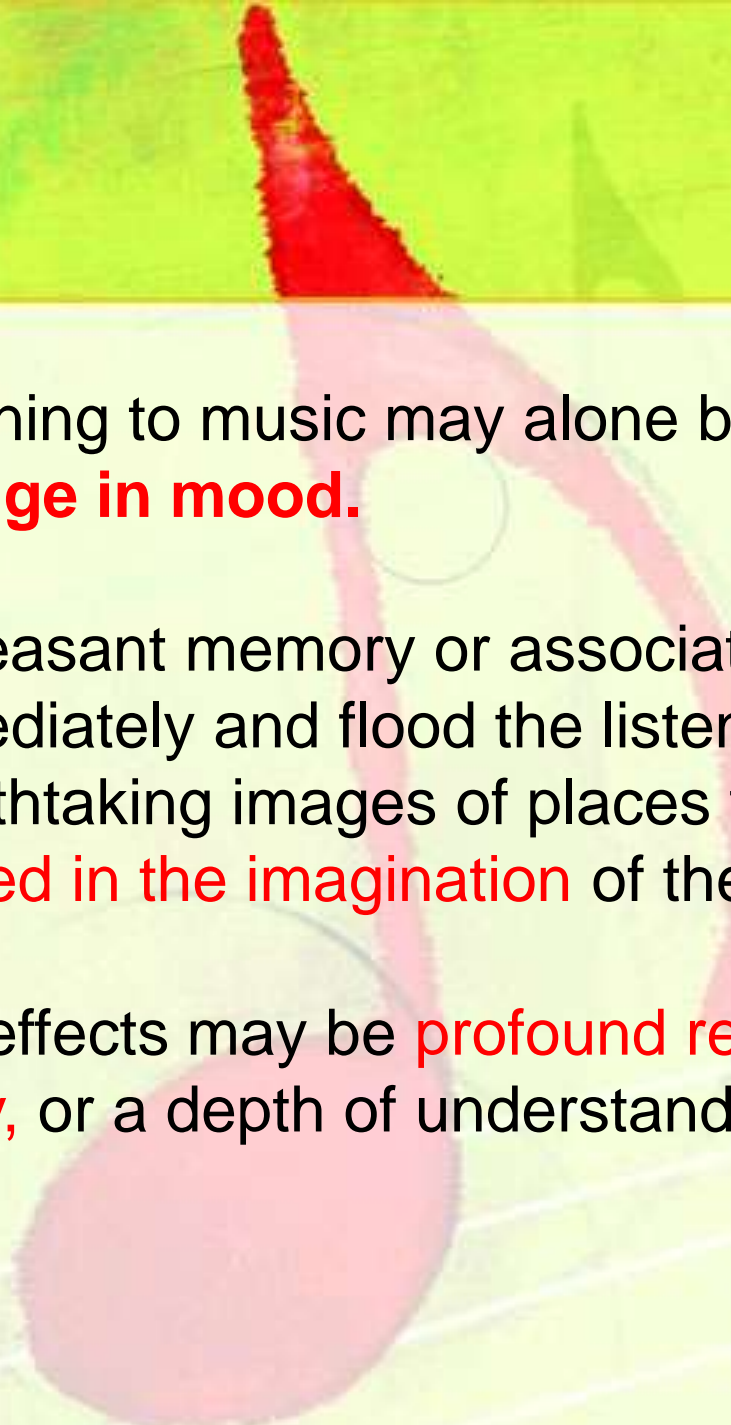
Music medicine is used as an adjunct to the medical treatments by medical professionals, typically nurses and doctors, and interventions are based on the **use of selected, pre-recorded Music provided by a therapist allows individual to adjust to patients'**





Music therapy, according to the *definition of American Association of Music Therapists*, is “the clinical and evidence-based use of music by a specialized therapist, which utilizes, through scientific methods, the emotional, communicational and expressional **attributes of music for therapeutic reasons and aims at the use of music and/or its elements (sound, rhythm, melody and harmony), in a therapeutic relationship, in a process to maintain and promote the mental, physical and cognitive health** of a client or a group”.

Live music administered by a music therapist has a greater effect than recorded music but **whether the patients participate in the music or listen to it, the music will usually have an effect on their thoughts as well as emotions.**

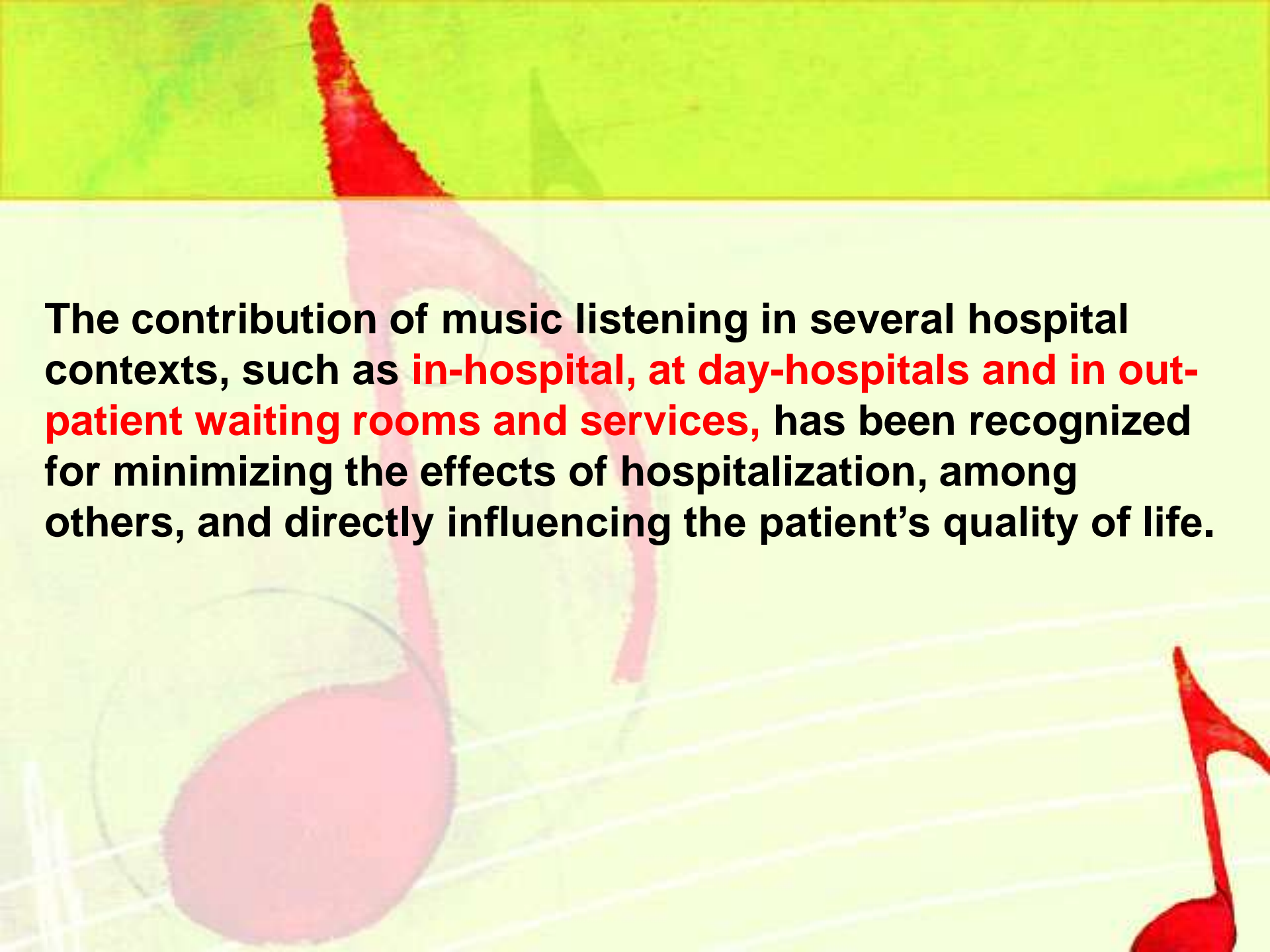


Listening to music may alone bring about an automatic **change in mood.**

A pleasant memory or association may come to mind immediately and flood the listener with **wonderful thoughts.** Breathtaking images of places far and wide may also be **elicited in the imagination** of the listener.

The effects may be **profound relaxation, a peak experience of joy,** or a depth of understanding or insight.





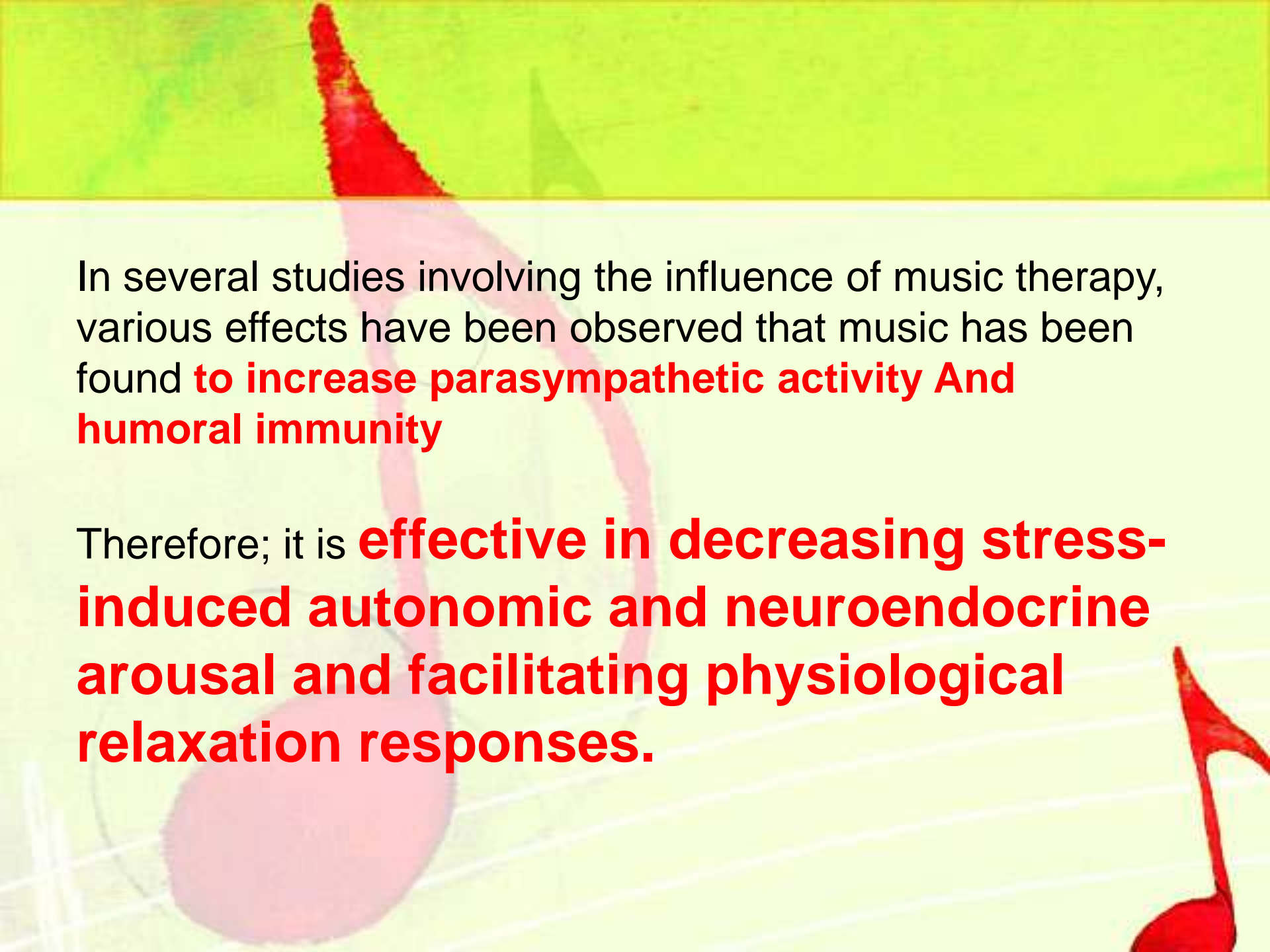
The contribution of music listening in several hospital contexts, such as **in-hospital, at day-hospitals and in out-patient waiting rooms and services**, has been recognized for minimizing the effects of hospitalization, among others, and directly influencing the patient's quality of life.



EFFECTS OF MUSIC LISTENING

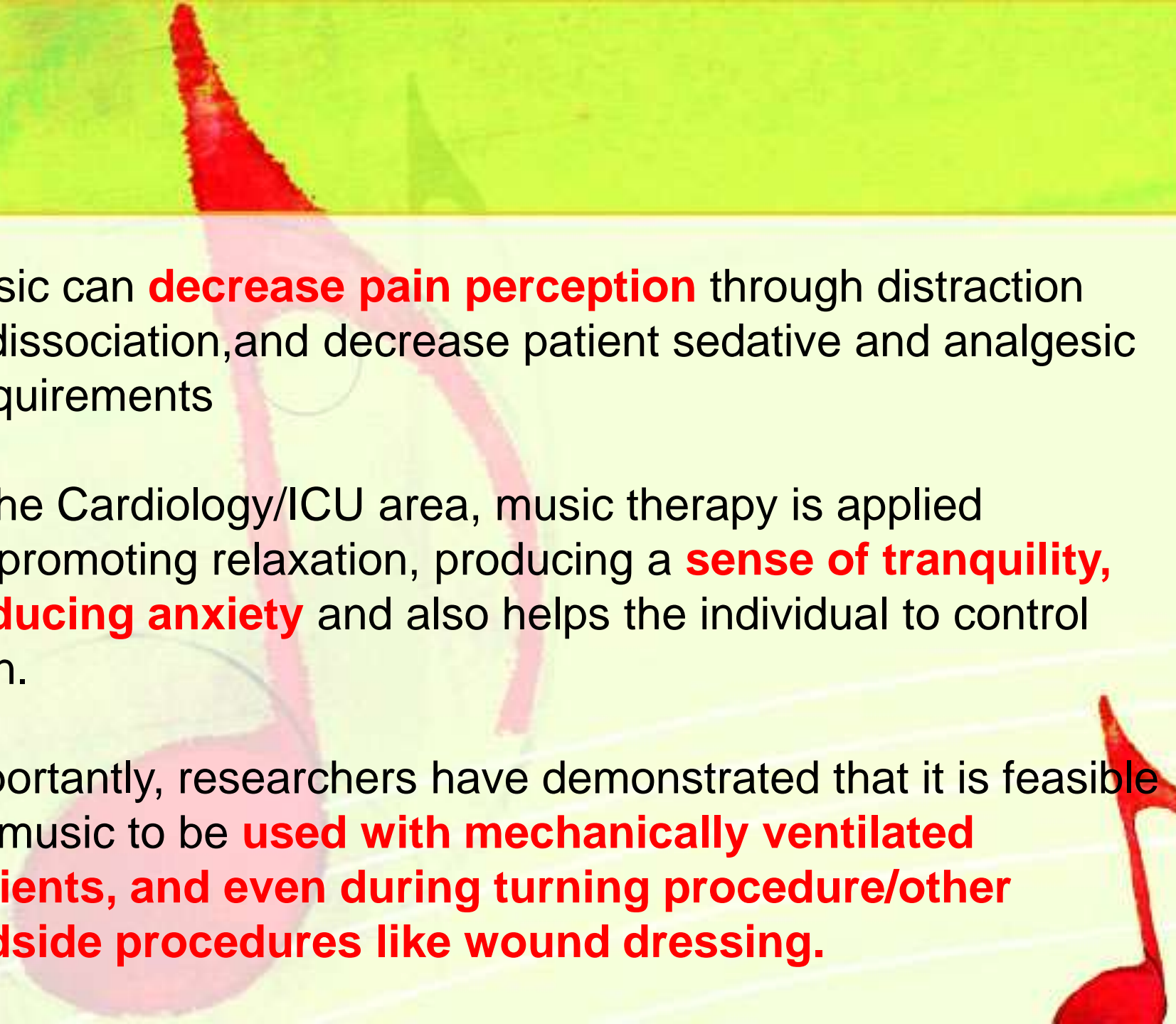
Music has at least three effects on human behavior: an emotional, exciting/stimulating effect, pleasurable effect.

According to the American Music Therapy Association, music therapy interventions can be **designed to promote wellness, manage stress, alleviate pain, express feelings, enhance memory, improve communication and promote physical rehabilitation.**



In several studies involving the influence of music therapy, various effects have been observed that music has been found **to increase parasympathetic activity And humoral immunity**

Therefore; it is **effective in decreasing stress-induced autonomic and neuroendocrine arousal and facilitating physiological relaxation responses.**



Music can **decrease pain perception** through distraction or dissociation, and decrease patient sedative and analgesic Requirements

In the Cardiology/ICU area, music therapy is applied for promoting relaxation, producing a **sense of tranquility, reducing anxiety** and also helps the individual to control pain.

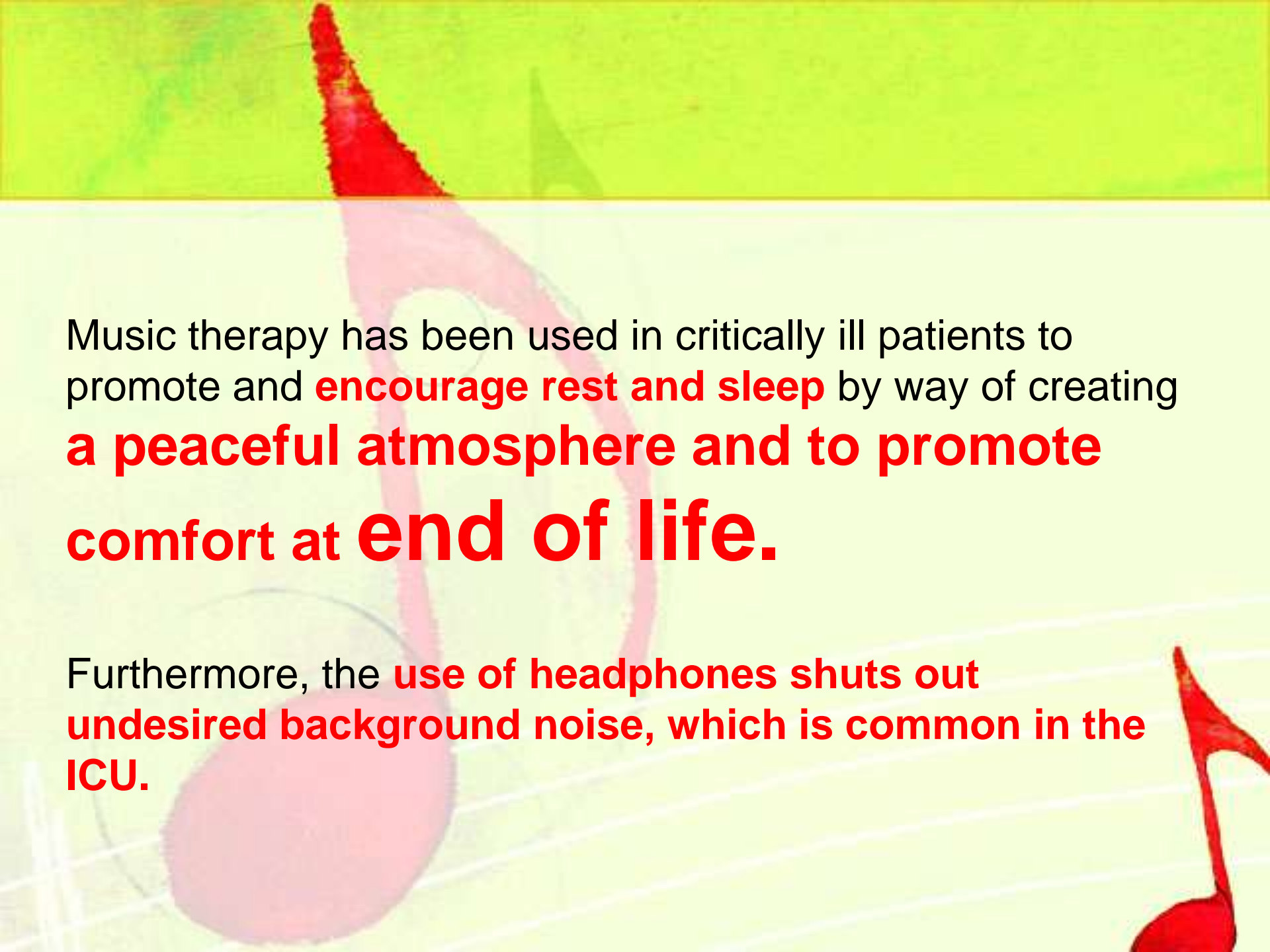
Importantly, researchers have demonstrated that it is feasible for music to be **used with mechanically ventilated patients, and even during turning procedure/other bedside procedures like wound dressing.**



Waking Times

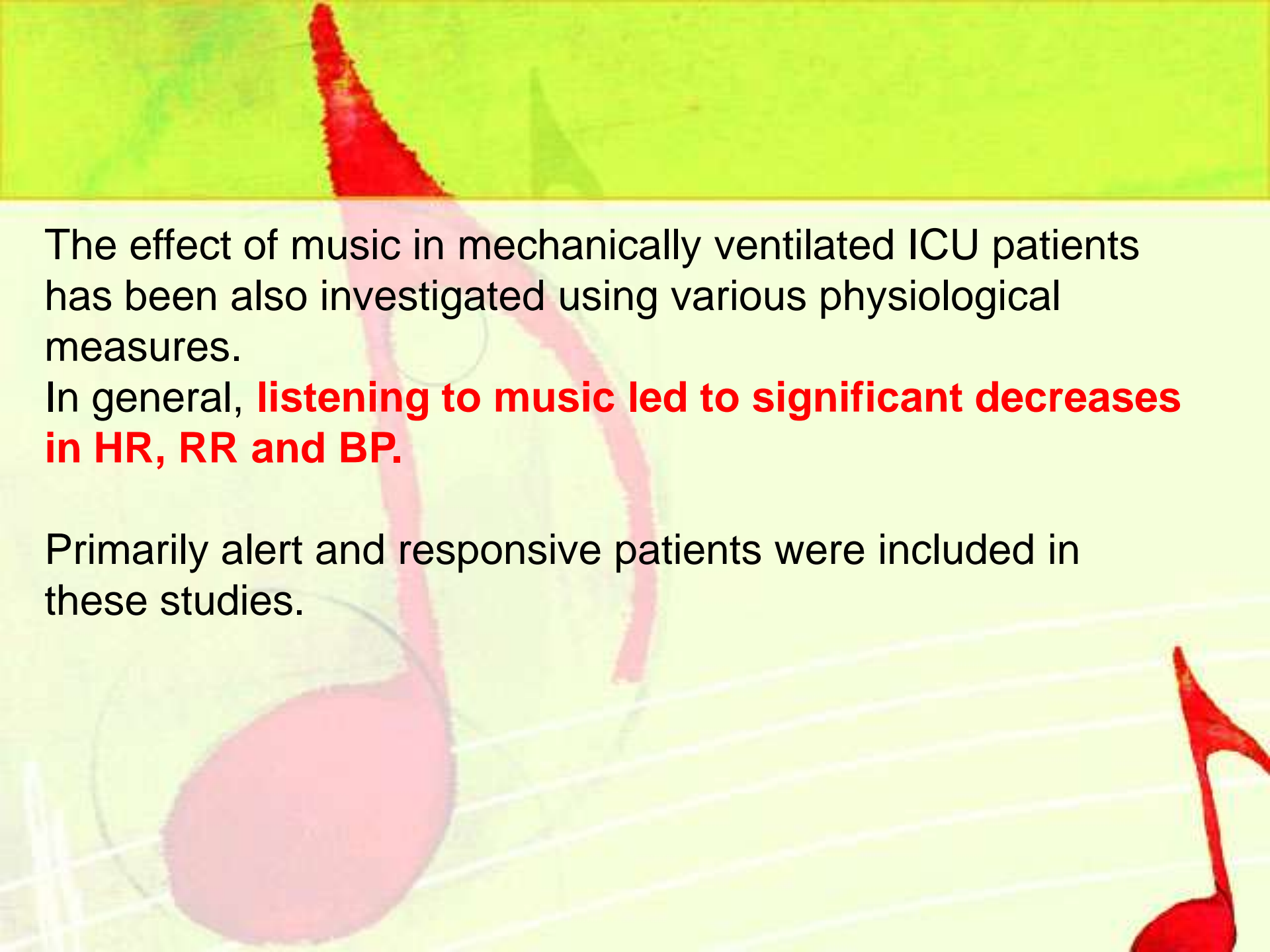
Doctors Now Prescribing Music Therapy for Many Serious Condition...

Music Therapy 1 AJ Block and Gracy Liura, Guests



Music therapy has been used in critically ill patients to promote and **encourage rest and sleep** by way of creating **a peaceful atmosphere and to promote comfort at end of life.**

Furthermore, the **use of headphones shuts out undesired background noise, which is common in the ICU.**



The effect of music in mechanically ventilated ICU patients has been also investigated using various physiological measures.

In general, **listening to music led to significant decreases in HR, RR and BP.**

Primarily alert and responsive patients were included in these studies.

Therefore, it was possible to measure anxiety in these patients using the **State-Trait Anxiety Inventory (STAI)**.

med.uottawa.ca

Exhibit 6.9 Examples of items from the State-Trait Anxiety Inventory

The S-Anxiety scale consists of twenty statements that evaluate how respondents feel “right now, at this moment”

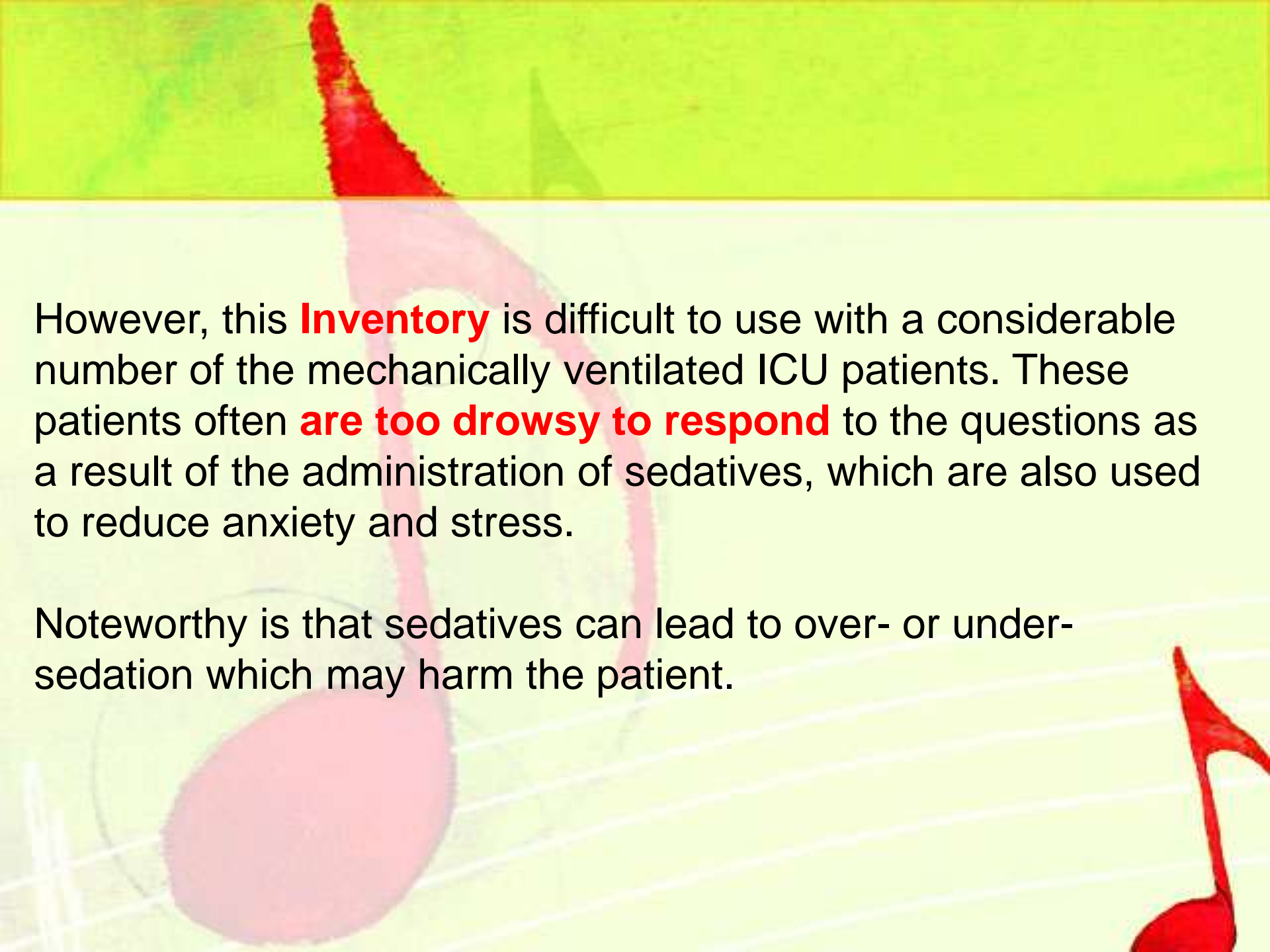
1 = NOT AT ALL 2 = SOMEWHAT 3 = MODERATELY SO 4 = VERY MUCH SO

- A. I feel at ease 1 2 3 4
B. I feel upset 1 2 3 4

The T-Anxiety scale consists of twenty statements that evaluate how respondents feel “generally”

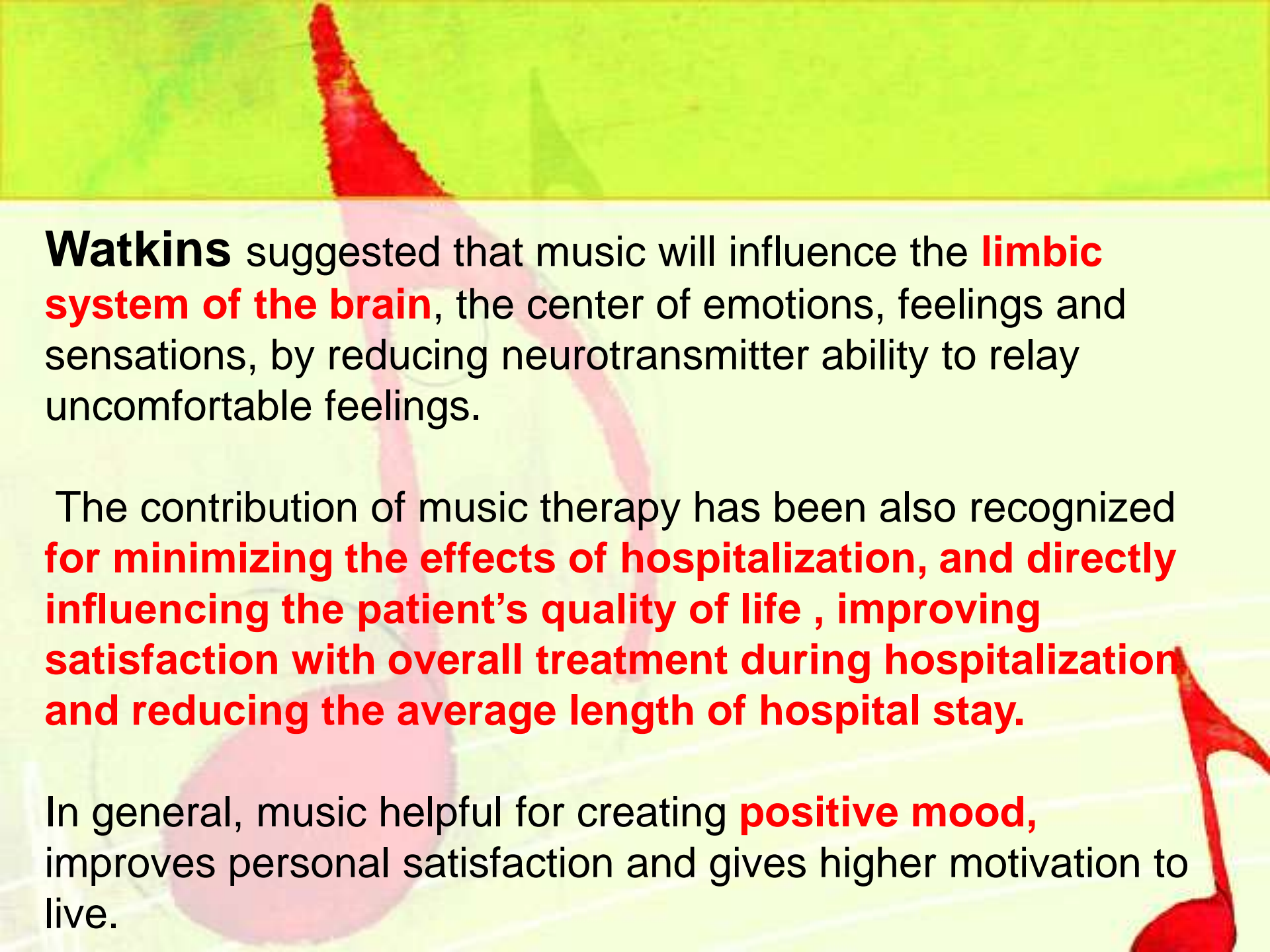
1 = ALMOST NEVER 2 = SOMETIMES 3 = OFTEN 4 = ALMOST ALWAYS

- A. I am a steady person 1 2 3 4
B. I lack self-confidence 1 2 3 4
-



However, this **Inventory** is difficult to use with a considerable number of the mechanically ventilated ICU patients. These patients often **are too drowsy to respond** to the questions as a result of the administration of sedatives, which are also used to reduce anxiety and stress.

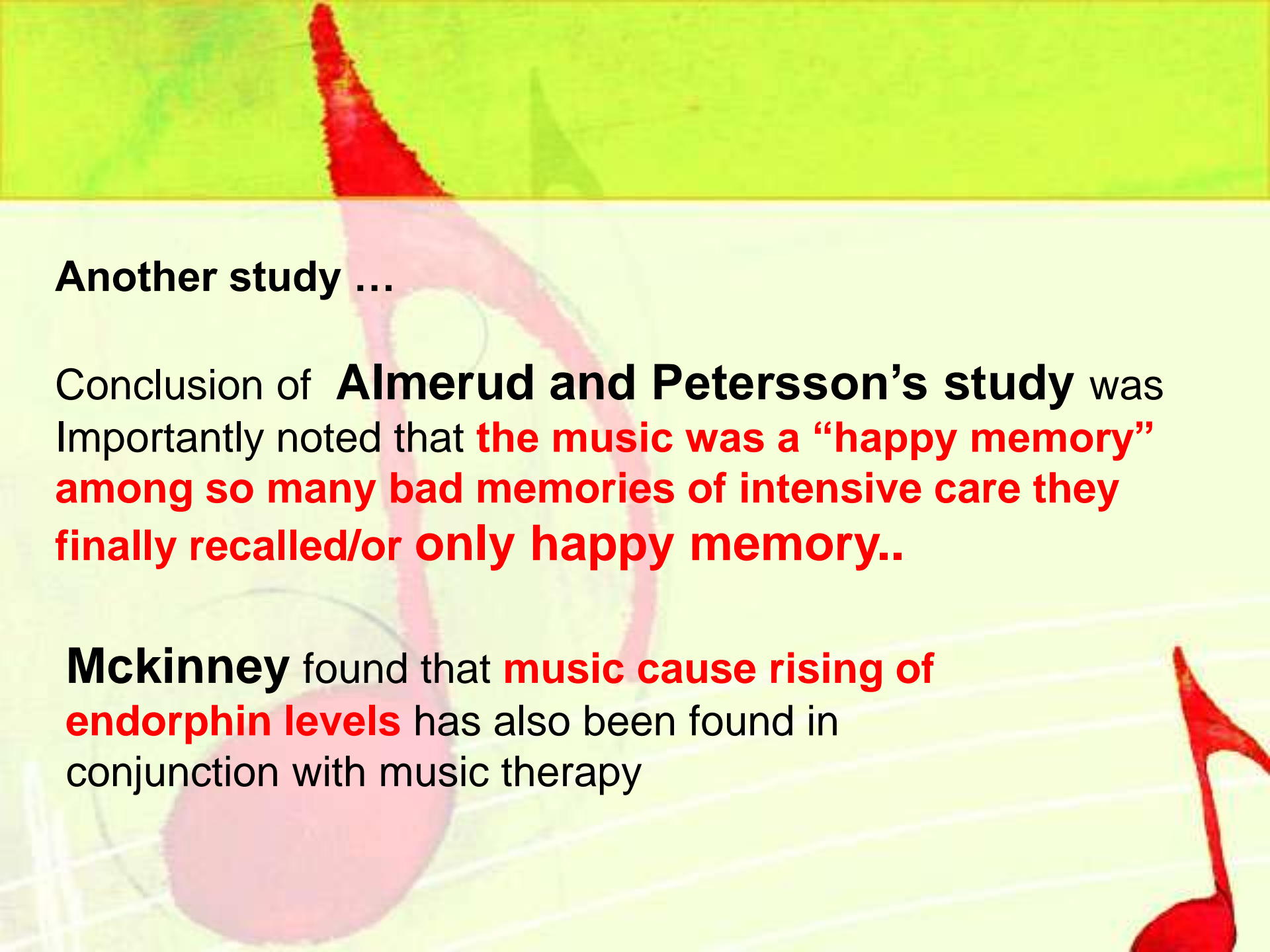
Noteworthy is that sedatives can lead to over- or under-sedation which may harm the patient.



Watkins suggested that music will influence the **limbic system of the brain**, the center of emotions, feelings and sensations, by reducing neurotransmitter ability to relay uncomfortable feelings.

The contribution of music therapy has been also recognized **for minimizing the effects of hospitalization, and directly influencing the patient's quality of life , improving satisfaction with overall treatment during hospitalization and reducing the average length of hospital stay.**

In general, music helpful for creating **positive mood**, improves personal satisfaction and gives higher motivation to live.



Another study ...

Conclusion of **Almerud and Petersson's study** was importantly noted that **the music was a "happy memory" among so many bad memories of intensive care they finally recalled/or only happy memory..**

Mckinney found that **music cause rising of endorphin levels** has also been found in conjunction with music therapy



Sarah's Second Chance

April 2013 – Sarah's Second Chance

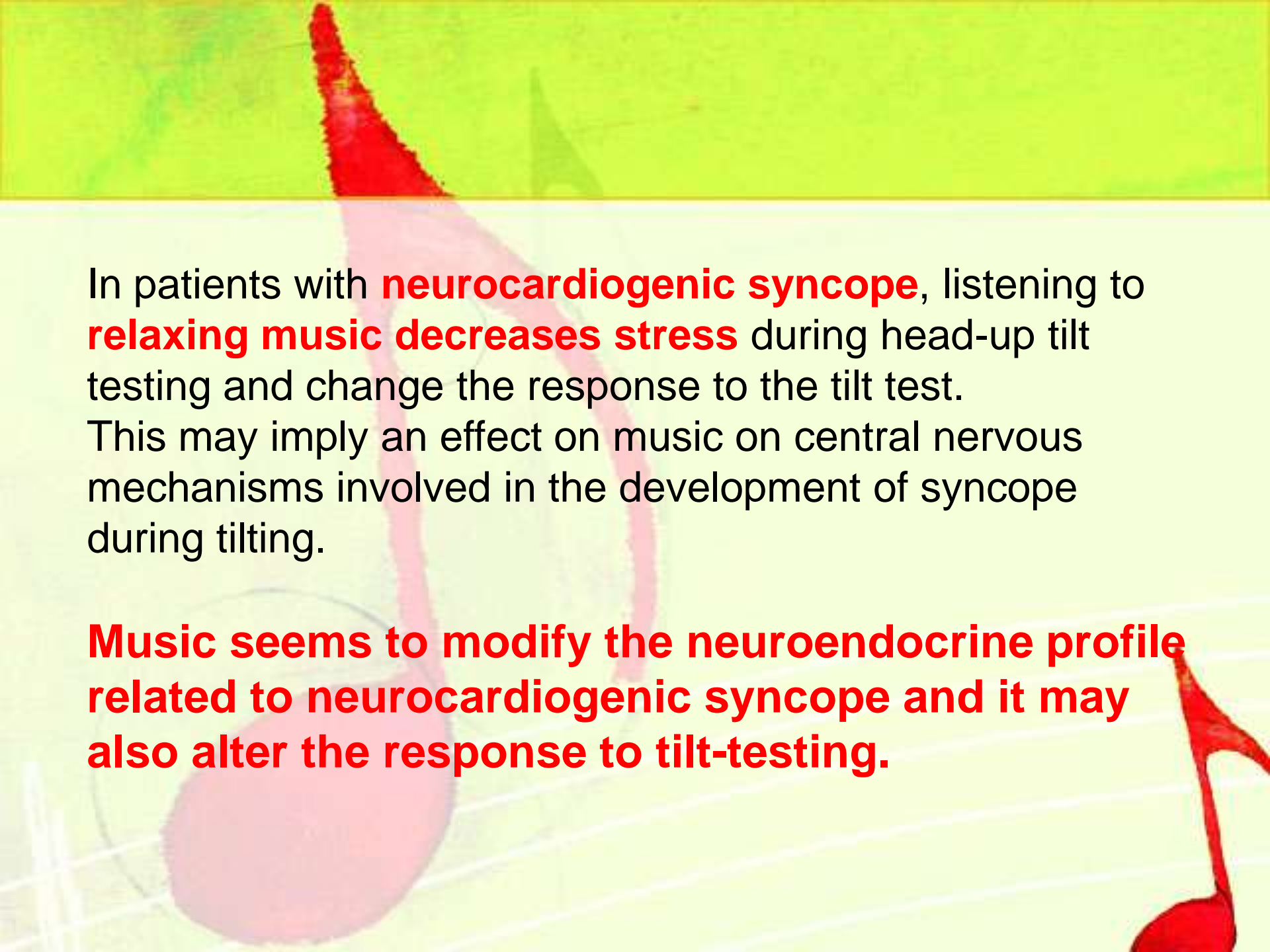
So many mornings in the hospital where Sarah felt so crummy and Amanda would come to play her guitar and sing. It always lifted Sarah up.



The ability of music to increase physical work activity has been documented for 2800 years. In **ancient Greece, the guitar and flute music was played during the Olympic Games with the goal of improving athletic performance.**

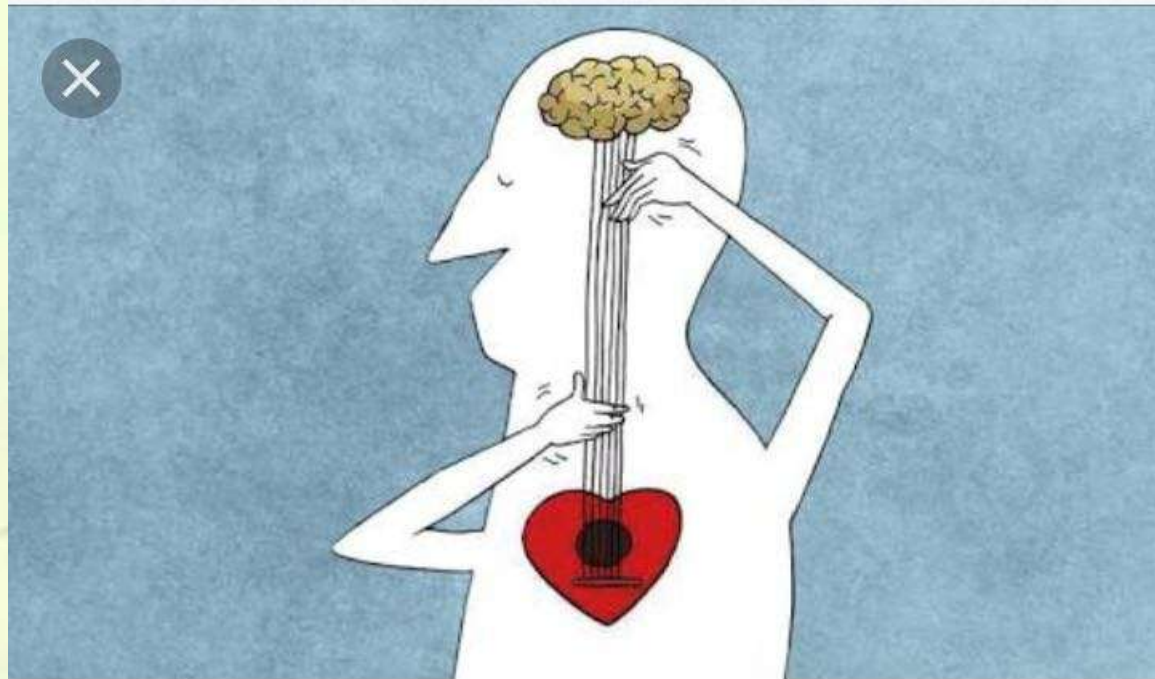
Tarchanoff found an effect on **muscular activity**, which increased or diminished according to the nature of the music played.

Also, **skin temperature changes** have been noted in people listening to music.



In patients with **neurocardiogenic syncope**, listening to **relaxing music decreases stress** during head-up tilt testing and change the response to the tilt test. This may imply an effect on music on central nervous mechanisms involved in the development of syncope during tilting.

Music seems to modify the neuroendocrine profile related to neurocardiogenic syncope and it may also alter the response to tilt-testing.



Humanizando los Cuidados Intensivos

About Music and Music Therapy in
ICU, by María Rojas – Humanizando ...



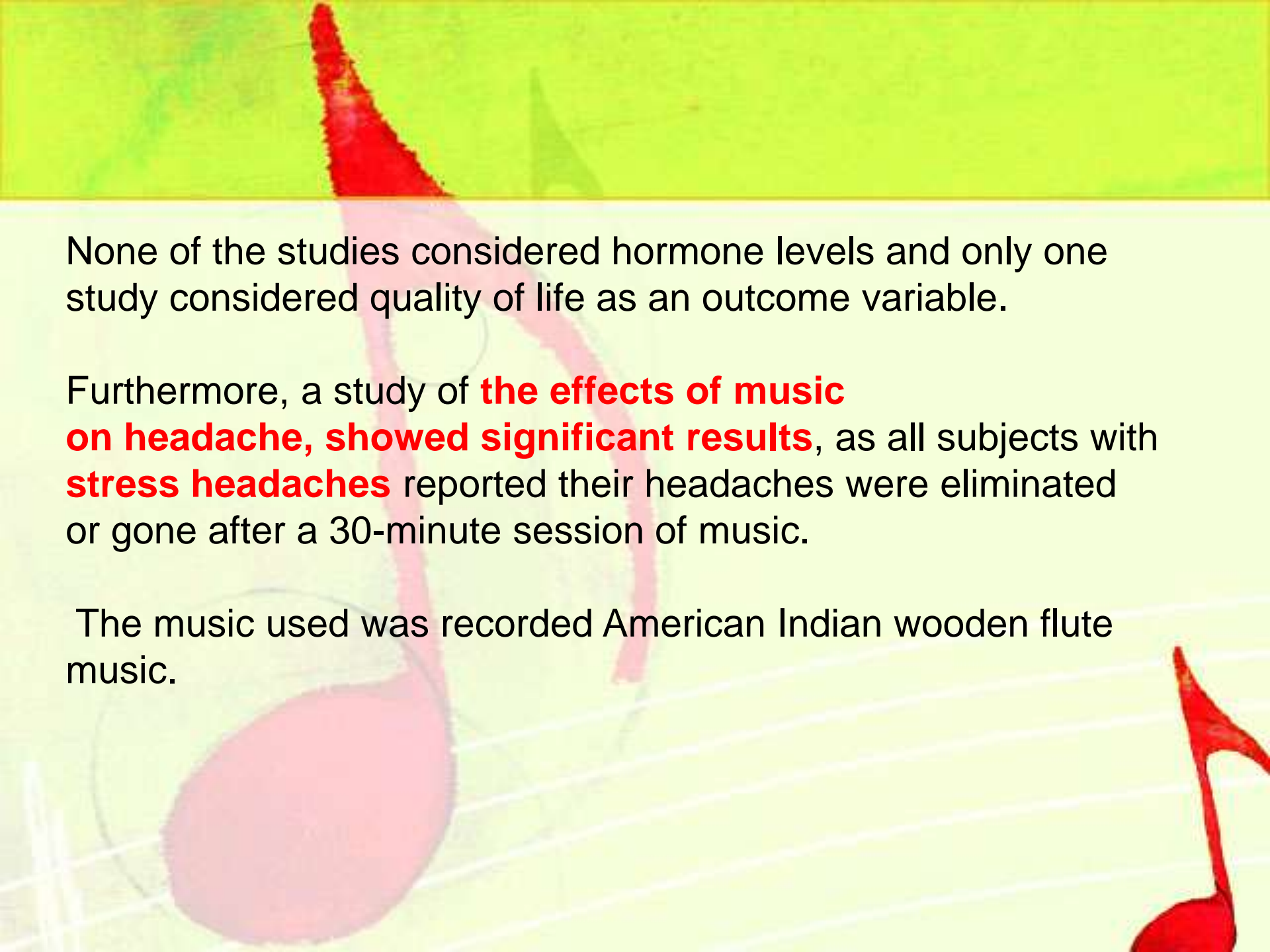
Bradt and Dileo reviewed all **randomized controlled trials** that compared music interventions and standard care with standard care alone for **persons with coronary heart disease**.

Twenty-three trials involving 1461 participants were included. Music listening was the main intervention used, and 21 of the studies did not include a trained music therapist.

Results indicated that music listening has a **moderate effect on anxiety in patients with coronary heart disease;**

Findings indicated that **listening to music reduces HR, RR & BP.**

Studies that included two or more music sessions led to a small and consistent pain-reducing effect.



None of the studies considered hormone levels and only one study considered quality of life as an outcome variable.

Furthermore, a study of **the effects of music on headache, showed significant results**, as all subjects with **stress headaches** reported their headaches were eliminated or gone after a 30-minute session of music.

The music used was recorded American Indian wooden flute music.



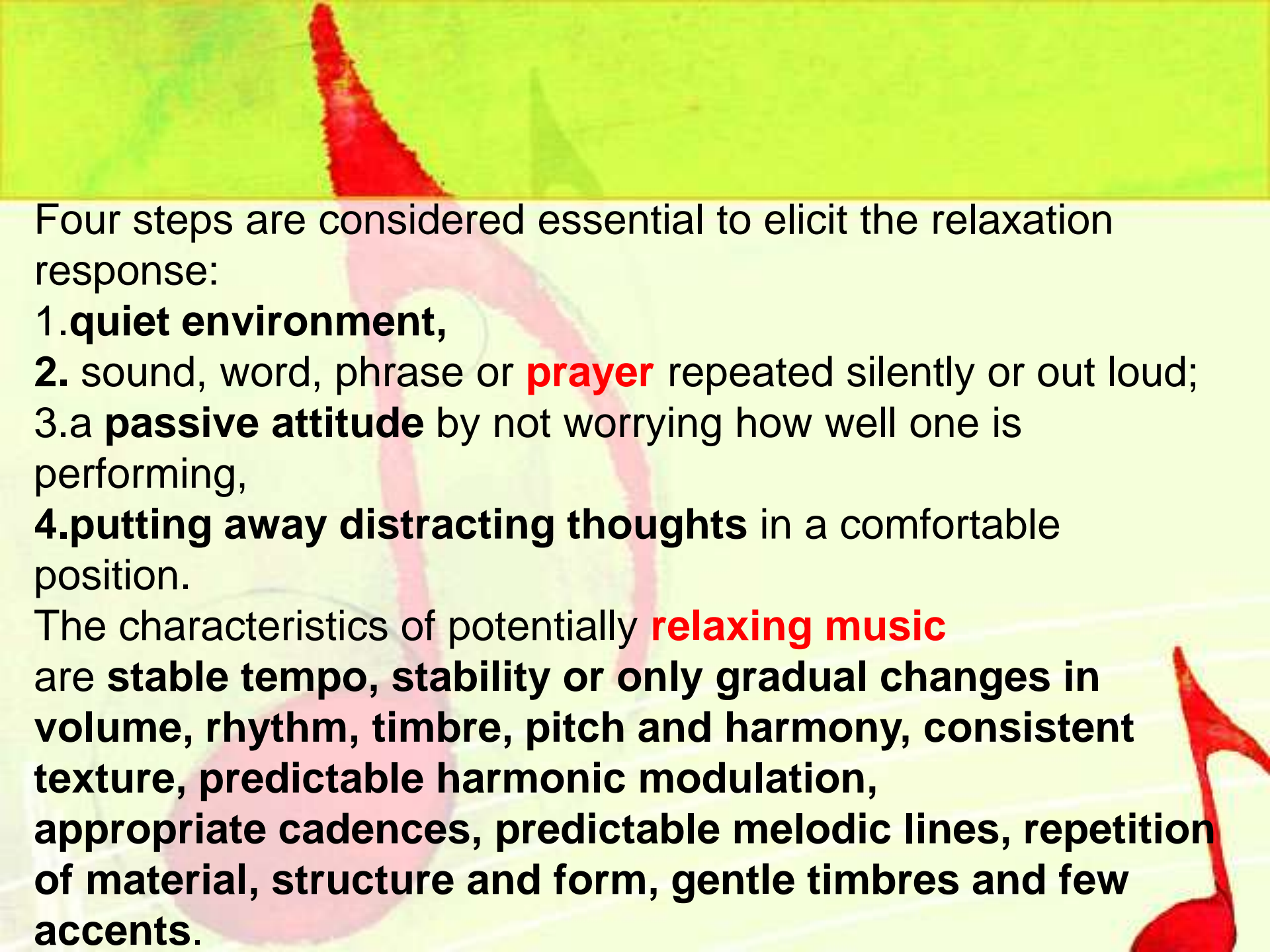
MUSIC FOR RELAXATION

Music can be used therapeutically for music-centered relaxation as a perceptual focus and stimulus.

Musical selections **with slow, flowing rhythms that duplicate pulses of 60 beats per minute** are characteristics of music for relaxation.

Music exerts its effect via entrainment or synchronization of body rhythms with those of musical selection.

Relaxation is defined as a “**physical state** of becoming less tense or tight in the muscles; and **psychologically to feel relaxed in the sense of feeling free from nervous anxiety and disturbing tensions.**”



Four steps are considered essential to elicit the relaxation response:

1. **quiet environment,**

2. sound, word, phrase or **prayer** repeated silently or out loud;

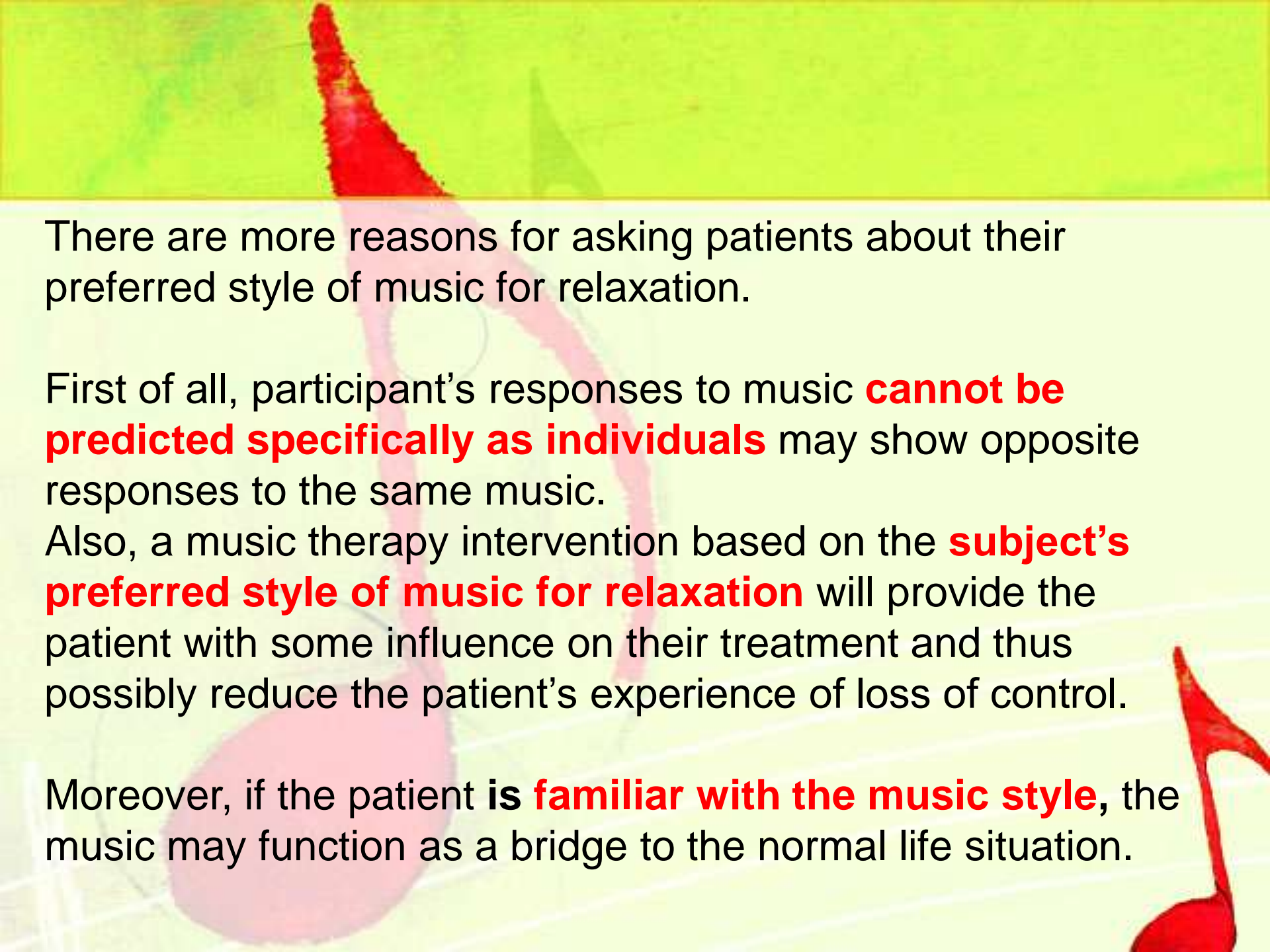
3. a **passive attitude** by not worrying how well one is performing,

4. **putting away distracting thoughts** in a comfortable position.

The characteristics of potentially **relaxing music**

are **stable tempo, stability or only gradual changes in volume, rhythm, timbre, pitch and harmony, consistent texture, predictable harmonic modulation,**

appropriate cadences, predictable melodic lines, repetition of material, structure and form, gentle timbres and few accents.



There are more reasons for asking patients about their preferred style of music for relaxation.

First of all, participant's responses to music **cannot be predicted specifically as individuals** may show opposite responses to the same music.

Also, a music therapy intervention based on the **subject's preferred style of music for relaxation** will provide the patient with some influence on their treatment and thus possibly reduce the patient's experience of loss of control.

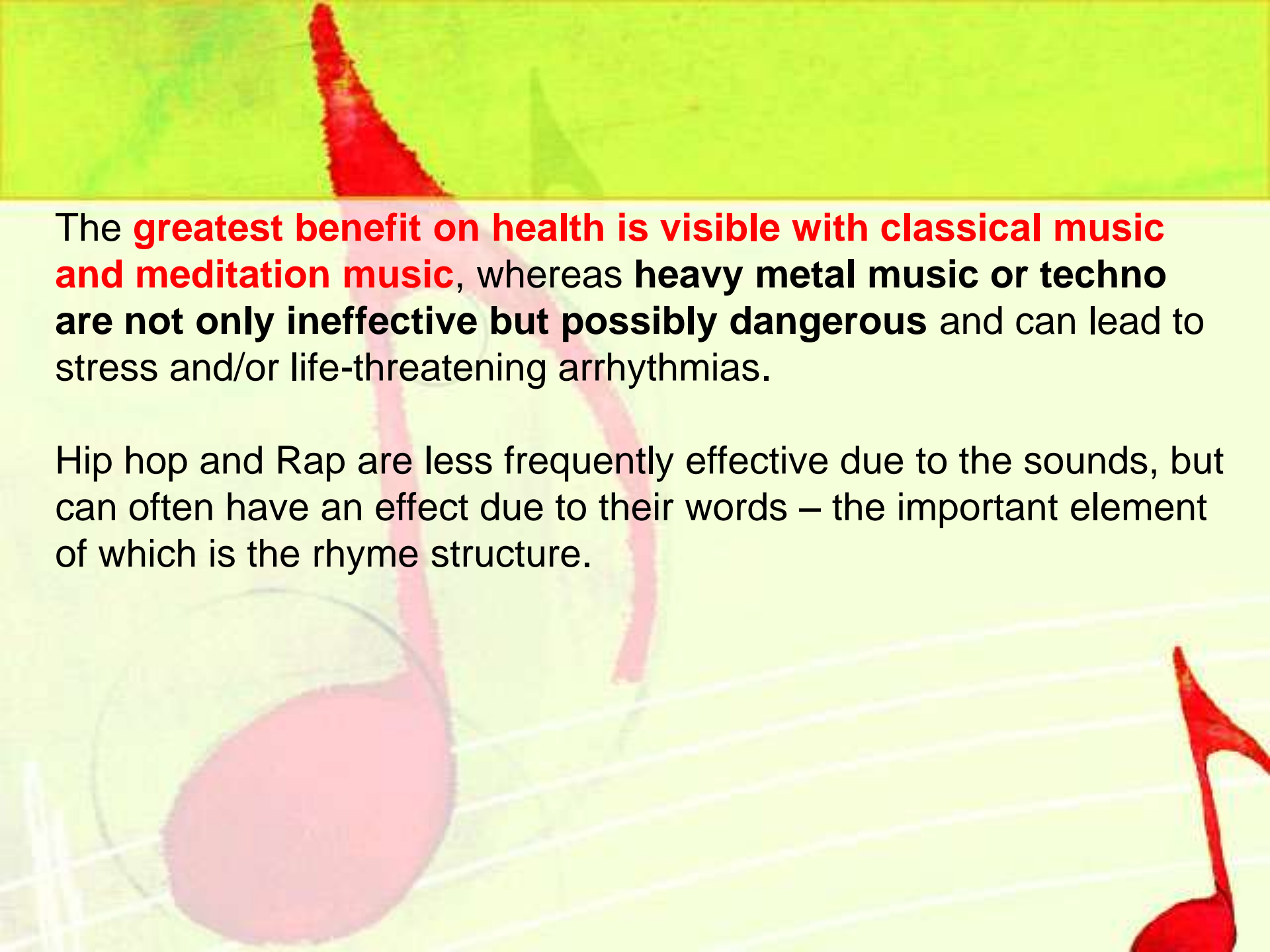
Moreover, if the patient **is familiar with the music style**, the music may function as a bridge to the normal life situation.

Which types of music ?

“Classical” music has been shown to **reduce circulating cortisol levels**, so it might be useful in hemodynamically stable critically ill patients to prevent hypercortisolemia and resulting deleterious effects.

“Techno” (electronic dance) music increases beta-endorphin, norepinephrine, ACTH and cortisol, so it might **prove valuable in hemodynamically unstable patients** to serve as an adjunct to vasopressors or cardiac stimulants.

However, this remains **rather a speculation in practice**, as techno music was found to be associated with a significant increase in HR, BP and significant changes in self-rated emotional states. This music encourages rage, disappointment and aggressive behavior.



The **greatest benefit on health is visible with classical music and meditation music**, whereas **heavy metal music or techno are not only ineffective but possibly dangerous** and can lead to stress and/or life-threatening arrhythmias.

Hip hop and Rap are less frequently effective due to the sounds, but can often have an effect due to their words – the important element of which is the rhyme structure.

In Dritsas et al study,

78% of patients showed a greater than 50% reduction in stress with music according to visual analogue scale analysis.

In the sample assessed, **only 18% of patients preferred classical music** to achieve relaxation compared to **82% of patients who preferred pop or traditional music**, which means that **classical music may be ideal only for those grown up in the particular culture** and culture aspects are very important in the choice of pre-recorded music. Also, the most preferred relaxative type of **musical instrument was flute (by 92% of patients)** and **natural sounds of rain or flow-ing water (by 96% of patients)**, and 78% of patients indicated color blue or green as the most common visual representation of relaxation.

In conclusion, the **vast majority of patients indicated a strongly positive attitude towards music in a hospital setting including the cardiac ICU.**



Optimal duration of a listening to relaxing music session
No Specific recommendations.

Often the music listening sessions used **lasted 20-35 minutes** (maximum 90 minutes).

The range of **70 to 105 decibels** is suggested as a preferred loudness of music for patients.

For the **ICU setting**, one may consider individual **delivery of music with headphones** as their use shuts out undesired background noise, which is common in this setting.

Cultural aspects are important

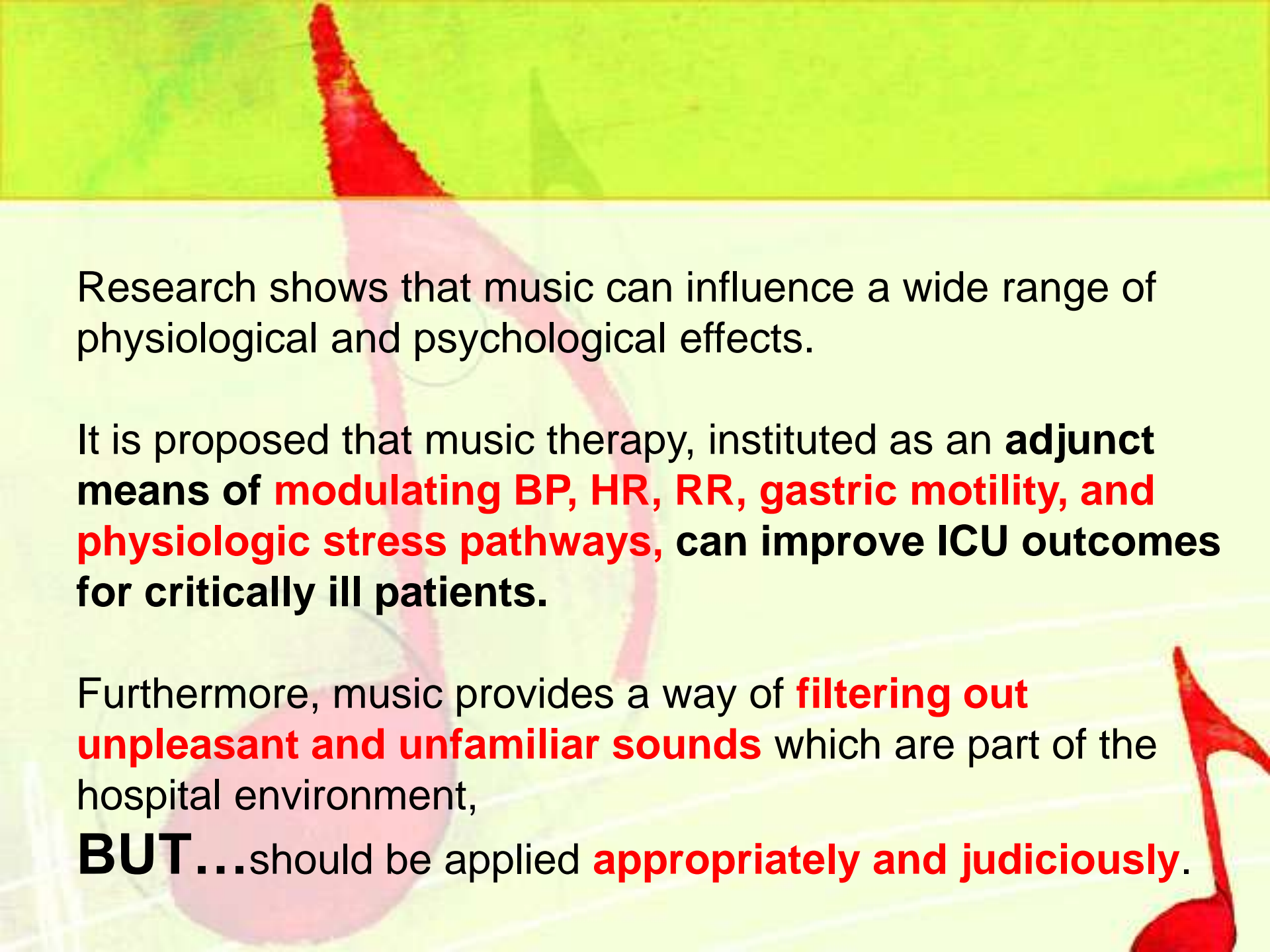
Music should **not be played continuously** as it can lead to irritation rather than a state of well-being

CONCLUSION

Music therapy is **widely reported** in the medical literature. There has been substantial progress in the establishment of research strategies for supporting clinical practice.

Music can be **used as a safe and inexpensive non-pharmacologic antianxiety intervention** to enhance relaxation and decrease stress in ICU patients

Different **types** of music (e.g. stimulating vs. relaxing music) and music **preference of the individual** patient may have a different effect.



Research shows that music can influence a wide range of physiological and psychological effects.

It is proposed that music therapy, instituted as an **adjunct means of modulating BP, HR, RR, gastric motility, and physiologic stress pathways**, can improve ICU outcomes for critically ill patients.

Furthermore, music provides a way of **filtering out unpleasant and unfamiliar sounds** which are part of the hospital environment,
BUT...should be applied **appropriately and judiciously**.



The key implication is to **educate doctors and nurses** on modern aspects of music therapy.

However, **further studies are necessary** to evaluate how music can be **further integrated clinically** and evaluate the **precise underlying mechanisms** of its beneficial effects, or **how to deliver music** in an optimal way, i.e. via loudspeakers, headphones, or audio-pillow, and **analyze the results according with** the cultural group, age, gender, and other pertinent parameters.

Bradt and Dileo reviewed all **randomized controlled trials** that compared music interventions and standard care with standard care alone for **persons with coronary heart disease**.

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Music Therapy in the ICU — Another Way to Lower Sedation Use?

Patricia Kritek, MD reviewing Chlan LL et al. JAMA 2013 Jun 12. Azoulay E et al. JAMA 2013 Jun 12.

Results suggest that an inexpensive intervention like patient-directed music in the ICU could help limit use of sedating medications and all the complications associated with them.



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Music therapy in critical care: indications and guidelines for intervention

L Chlan and MF Tracy

Music therapy is an effective intervention for critically ill patients for such purposes as anxiety reduction and stress management. The therapy is readily accepted by patients and is an intervention patients thoroughly enjoy. The MAIT is one resource that nurses caring for critically ill patients can use to implement music therapy in clinical practice. Patients can be given the opportunity to select a musical tape they prefer and to negotiate with the nurse for uninterrupted music-listening periods. Allowing patients control over music selection and providing uninterrupted time for music listening gives the patients an enhanced sense of control in an environment that often controls them.

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Published: 16 January 2015

Journal club critique

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Published: 16 January 2015

Expanded abstract

Citation

Chlan LL, Weinert CR, Heiderscheit A, Tracy MF, Skaar DJ, Guttormson JL, Savik K:

Effects of patient-directed music intervention on anxiety and sedative exposure in critically ill patients receiving mechanical ventilatory support: a randomized clinical trial. JAMA 2013, 309:2335–2344.

The background of the slide features a light green and yellow gradient at the top, transitioning into a white musical staff with horizontal lines. A large, semi-transparent pink treble clef is positioned on the left side of the staff. A red treble clef is located at the top left, and a red eighth note is at the bottom right.

Conclusions

Among ICU patients receiving acute ventilatory support for respiratory failure, **MUSIC THERAPY resulted in greater reduction in anxiety** compared with usual care.

Concurrently, **MUSIC THERAPY resulted in greater reduction in sedation frequency compared with usual care, and greater reduction in sedation intensity** compared with usual care.



Thank you