#### UNIT 4 | TOPIC 6

TAKE A BREATH: TECHNIQUES AND METHODS FOR STRESS RELIEF AND RELAXATION

TOPIC

06

# MUSIC FOR STRESS RELIEF

in this topic we are going to focus on on the therapeutic benefits of music, particularly 432 Hz frequencies, in reducing stress, enhancing emotional well-being, and improving focus and relaxation through practical strategies and scientific insights.



## **LEARNING OBJECTIVES**

# THIS TOPIC IS DESIGNED AROUND THE FOLLOWING MAIN LEARNING OBJECTIVES:

01

# Therapeutic Benefits of Music

Understand how music, especially 432 Hz frequencies, reduces stress and enhances emotional wellbeing.

03

## Music in Daily Stress Management

Discover techniques for using music to manage work-related stress and boost productivity.

05

# Personalized Music Strategies

Create tailored approaches for using music in relaxation, focus, and mood improvement

02

# Physiological Effects of Music

Learn how music synchronizes brainwaves, heart rate, and breathing to promote relaxation.

04

## **Frequency Comparisons**

Explore the differences between 432 Hz and 440 Hz music and their impact on mental clarity and mood.

06

# Music and Emotional Regulation

Examine how music influences emotional processing and supports stress resilience.

## **COMPETENCES**

# THIS TRAINING CONTENT IS DESIGNED TO HELP YOU ACQUIRE THE FOLLOWING COMPETENCES:

- Building Positive Working Mood: Developing and using collaborative relationships to facilitate the accomplishment of work goals.
- O2 **Energy Management:** Ability to approach your working day with the mindset that you are managing your energy, not only your time.
- Interpersonal sensitivity: Show that you are aware of others and the environment as well as the influence exerted on both. Develop a behaviour that reflects the recognition of the feelings of others, showing empathy in the face of the different situations that can occur in personal dealings with employees or collaborators.
- Self-perception: Observe and interpret one's own behaviours, thoughts, and feelings, and using those observations and interpretations to define oneself.
- Self-regulation: Ability to understand and manage your behaviour and your reactions to feelings and things happening around you.
- **Sociability:** Interact and relate effortlessly with other people. Being able to make contacts with others and develop social activities.

# HOW USING MUSIC CAN RELIEVE STRESS AND IMPROVE EMOTIONAL WELL-BEING

#### Introduction

Music can be used as a therapeutic tool to not only reduce stress, but to also promote healing and improve one's overall emotional well-being. Recent research demonstrates that the use of music in addition to standard therapeutic tools provides additional restorative benefits for people with depression and anxiety, compared to those who received just therapy without the use of music. Different uses may include listening to music, playing a musical instrument, singing along to music and using guided imagery with music.



#### Music Can Make Us Feel Good

Listening to music has been associated with improving our physical health and well-being. There is good reason to believe that even more benefits are gained from **music therapy** when it is not used as a random activity, but **as an intentional strategy to improve health and well-being**. One **study** demonstrated that listening to music while taking a break reduced the prevalence of stress among front-line nurses, a profession that has long been marked by high rates of stress and **occupational burn-out**.

In addition, there is solid evidence that music stimulates the production of dopamine, the "feel good" hormone in our bodies. Through the use of functional magnetic resonance imaging (MRI), a 2011 study demonstrated that dopamine increased in the brain when listeners experienced positive emotions in the same areas of the brain where pleasure is experienced when food and other sorts of cravings are satisfied.

These findings shed light on why music has played such a significant role shaping culture and is a source of pleasure for human beings throughout our history.



# UNDERSTANDING THE POWER OF MUSIC

## **Everything is Vibration.**

Frequency. Vibration. Resonance. We all know how these words. They once belonged mainly to the fields of physics and acoustics, but are now commonly used outside of their original context. If we enjoy someone's company, it's because they have a "good vibe" and we "resonate" with them, right?

If there is a good understanding between two people, it is because they're on the same "wavelength".

Possibly, the reason why these words work so well in these examples is because they hint to an underlying order of things that, although not cognitively aware of, we perceive and recognize at some level.

After all, quantum physics, as well as ancient spiritual traditions, teaches us that "everything is vibration" and everything is interconnected.

Music is more than just entertainment—it's a scientifically-backed tool for improving mental health and reducing stress. Let's explore this fascinating connection further.



# The Brainwave synchronization

This is a phenomenon where slowtempo music helps the brain enter a state of alpha waves, which are associated with being both relaxed and alert. Alpha waves typically occur when you're calm but not such as durina sleepv. meditation or a peaceful moment of daydreaming. Slow music, especially in the range of 60-80 beats per minute, gently guides your brain to this state, making it easier to concentrate while reducing feelings of stress. This process is like a natural reset for your mind, helping you feel composed yet focused, which is crucial during hectic workdays.



To put it simply, slow tempos act like metronome for your harmonizing your thoughts and emotions. **Imagine** а chaotic orchestra suddenly finding rhythm under a skilled conductor - this is what happens when your brain syncs with soothing music. This effect not only improves your ability to manage stress but also primes vou for creative thinking problem-solving, makina it powerful tool for productivity in the workplace.

# The Physiological Impact of Music

There's a lot to say here, but one notable fact is that music with a tempo of 60-80 beats per minute can help synchronize heart rate and breathing, fostering a state of relaxation. Slow and steady rhythms act as a pacemaker for the body, signaling it to slow down and decompress. This synchronization is why certain genres, like classical or ambient, are often used in stress management practices.

Relaxing music can help ease muscle tension, reducing physical symptoms of stress. It triggers the parasympathetic nervous system—responsible for the body's "rest and digest" response—and provides a sense of physical relief. For instance, many people find that lying down and listening to calming melodies helps release tension built up from long hours at a desk.

#### The "Mozart Effect"

Originally a study suggesting that listening to Mozart improves spatial reasoning and focus. This idea came from a 1993 experiment where participants performed better on spatial-temporal reasoning after listening to Mozart. While subsequent research has questioned the extent of these claims, the broader consensus is that certain types of music, such as classical, can influence positively cognitive performance by improving mood and reducing stress. For example, instrumental music's lack of lyrics allows the brain to concentrate without linguistic interference.

Beyond Mozart, other classical and instrumental genres have been shown to create similar effects, particularly in tasks requiring sustained focus. This shows that the underlying mechanism is less about the composer and more about the calming and structured nature of such music.

A landmark study conducted by Allen and Blascovich (1994) investigated the effects of music on surgeons. The results revealed that surgeons who listened to their preferred music while operating experienced significantly lower heart rates and stress levels compared to those in silence. Notably, their performance in terms of precision and speed also improved. This highlights the dual benefit of

music's calming influence and its ability to enhance focus. Now think about extending this idea to everyday work scenarios, where employees working on high-stress tasks could benefit from incorporating background music that aligns with their personal preferences. This could indeed foster both relaxation and productivity.





# OUR SOUL IS COMPOSED OF HARMONY

LEONARDO DA VINCI

# MUSIC PERFORMED IN DIFFERENT FREQUENCY

# The Measurement of Vibrations.

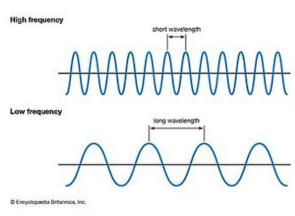
Music has delighted our senses, inspired our minds, and pulled on our heartstrings since the beginnings of civilization. When musicians began to travel around the world performing orchestras and concerts they started to run into the problem of instruments being tuned differently in different parts of the world, and agreed that some standardization was needed.

As early as the late 1800s European governments began to discuss establishing a universal frequency, so that a key on a piano sounded the same regardless of where in the world you were playing. Musicians wanted to be able to play concerts around the world and have their performances sound the same, and the conversation about SO establishing a tone standard began.

Basically, frequency tells us how many wave crests pass a given point in a second, which leads us to the simplest frequency formula: f = 1 / T. When it comes to music – frequency is measured in Hertz.

Hertz is a metric measurement of how often something occurs per second. When we talk about Hertz in relation to music and sound, we're discussing the cycles per second of the sound wave. It's measurement of vibrations. When sound travels through the air, the atmospheric pressure varies every so often. The number of pressure variations per second is the frequency of sound. The cycles per second give us our Hertz measurement. The sounds that we hear are compression waves vibrating through the air and eventually reaching our ears.

So, when we say that a piece of music is **432 Hertz**, it means that **432 musical vibrations occur per second**.



Source: Encyclopedia Britannica)

#### **Transition to 440 Hz Music**

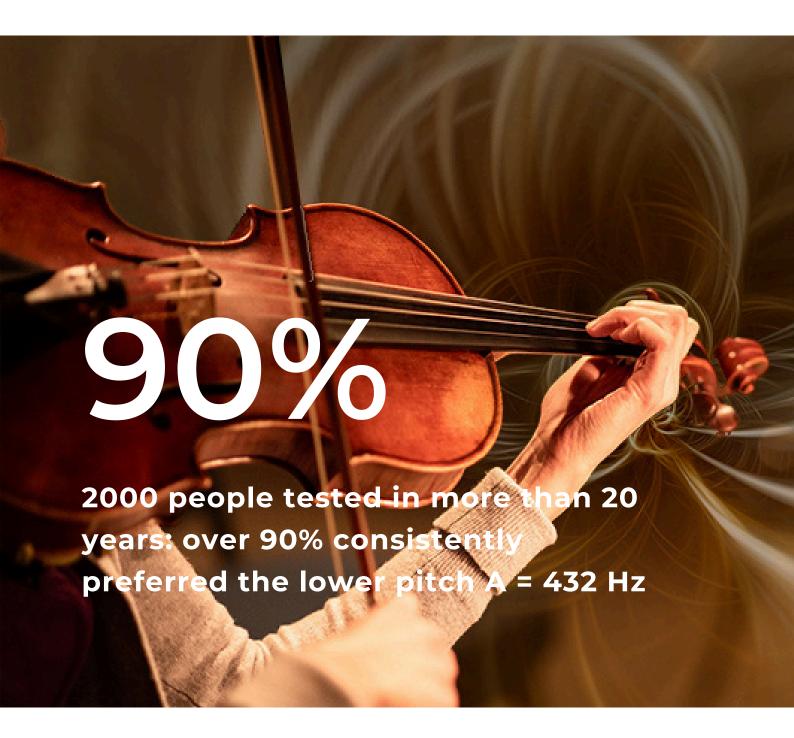
From the 17th century onward, the reference A (the pitch that serves as a standard tuning note for musical instruments and vocalists) ranged from a low of 373.7Hz to a high of 457.6Hz. In 1956 a worldwide agreement was signed and it was decided that A will equal 440 Hz and was standardized it bv the International Organization for Standardization as ISO 16 only in **1975**.



There exists a particular line of study called Cymatics which explores the visual pattern a tone makes when it resonates through matter. It seems that 432 Hz frequency is closely related to the concept of resonance. Resonance is the phenomenon that occurs when an object vibrates at the same frequency as another object, causing the second object to vibrate in sympathy. When the human body is exposed to the 432 Hz frequency, it begins to resonate with it, resulting in a sense of harmony and well-being.

So why are we talking about Hertz and frequencies? Truth is, in our days everything is too fast-paced and it's easy to feel overwhelmed and stressed out. Many of us struggle to find moments of peace and relaxation in our busy lives. Luckily, there's an easy solution to this problem - listening to music. Imagine if there was a type of music that could do more than just provide temporary relief from stress? A type of music that could actually improve your mental and physical health? 432 Hz music can do exactly that.

One of the most significant benefits of listening to 432 Hz music is that it can help to improve mental clarity and focus. This is because the tuning of the music promotes a state of relaxation and calmness, which can help to reduce mental fog and increase concentration.



## The pleasant tone

Maria Renold, a German-American Violinist and Violist, conducted very **simple aural experiments**, limited to two pairs of tones based on the concert pitches A=432Hz and A=440Hz, on more than 2000 people of all ages and different occupations in the USA, Italy, Germany and Switzerland. The notes were given in different order, on different instruments, with various means to avoid prejudicing the listener. The wide variety of comments all went in the similar direction of calling the higher pitch A = 440 Hz more "irritating, unpleasant, aggressive, making one stressful and nervous". The lower one A = 432 Hz, on the other hand, sounded "right, complete, pleasant, radiant, peaceful, harmonious, heartfelt but leaving one free".



# IT'S WONDERFUL TO FEEL ENERGIZED AND CLEAR-MINDED

**Kimberly King** 





@VictoriaLeePhotography

In a **recent case**, Kimberly King (bestselling and award-winning author) experienced persistent insomnia and fog following a COVID-19 infection. Traditional methods like diet adjustments and exercise offered little relief. Upon her hairdresser's suggestion, she began listening to music tuned to 432 Hz before sleep. This specific frequency, often referred to as "Verdi's A," is believed to have calming effects on the brain. Remarkably, Kimberly reported improved sleep quality and reduction in cognitive issues after incorporating this practice into her nightly routine. Kimberly has been practicing music frequency therapy ever since.



# MAKE INTENTIONAL USE OF MUSIC IN YOUR WORKDAY

# Using music intentionally for focus

Music can be a powerful ally in maintaining focus, especially during tasks that require sustained concentration. Instrumental and ambient tracks are particularly effective because they eliminate the potential distractions caused by lyrics. Without words to process, your brain is free to channel its cognitive resources toward the task at hand. Ambient music, with its gentle, repetitive rhythms minimal variation, creates a sonic environment that encourages deep work and flow. For example, many professionals use playlists with piano solos, soft electronic beats, or nature-inspired ambient sounds to steady, unobtrusive create а backdrop for productivity. Research suggests that these types of tracks help the brain enter a state of heightened focus bν reducina external distractions and mental clutter.

Consistency in rhythm also plays a key role. Tracks with a steady tempo—not too fast or slow—can act like a metronome for your mind, helping you sustain a consistent pace while working.

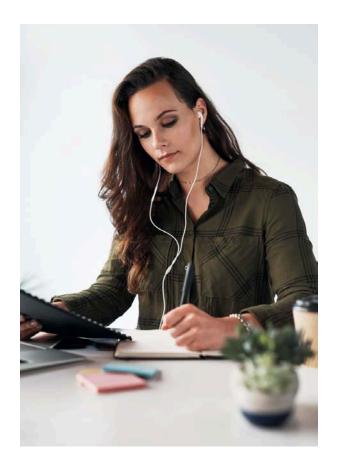
Apps like **Brain.fm** and **Endel** provide Al-curated soundscapes specifically designed to enhance focus. Experimenting with these can help you identify the ideal sound environment for your work style.

Bottom line is you can transform your workspace into a zone of heightened efficiency and creativity, just by intentionally selecting instrumental or ambient music.



# Using music intentionally for stress relief

Engaging with music, either by listening or creating it, enhances blood flow to areas of the brain responsible for emotions. The limbic system, which handles emotional processing and memory, becomes highly active when we hear music. Think of your favorite jam and the chills you've felt when listening to it. That is the very manifestation of music for stress relief. Similarly, when you hear a song for the first your body may release dopamine upon hearing just the first few notes of the song. That's why it "feels" so good. Research has proven that listening to music can help brain cells process data more efficiently and can facilitate the brain's ability to adapt.



addition. scientific In research provides a strong foundation for slow-tempo using music and nature-inspired sounds to relieve stress. Tracks within the 60-80 beats per minute range are particularly effective because they naturally synchronize with the body's internal rhythms, such as heart rate and breathing. This synchronization, also known as entrainment, activates the parasympathetic nervous system, which is responsible for the body's and digest" response. fascinating study published PLOS ONE found that participants listening to music with slow tempos experienced significant decreases in blood pressure and cortisol levels, music's ability to underscoring promote physiological calmness. In particular, the findings of the study findings "suggest that listening to slow-tempo and fast-tempo music is accompanied by an increase in the oxytocin level and a decrease in the cortisol level, respectively, and imply that such music listening-related changes in oxytocin and cortisol are involved in physiological relaxation emotional excitation, and respectively".

Another interesting study in the Journal of Music Therapy revealed nature-based that music significantly improved emotional regulation and reduced anxiety among participants. For example, listening to ocean sounds not only the soothes mind but also subconsciously reminds the listener

of vast, open spaces, creating a sense of freedom and escape.

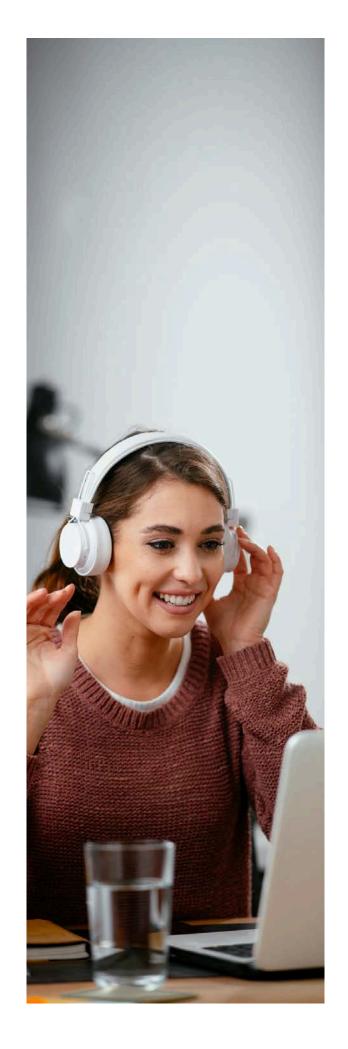
Nature-inspired sounds, such as rainfall, ocean waves, or forest ambiance, are particularly effective in calming the mind and fostering a sense of tranquility. These sounds often evoke mental imagery of peaceful environments, helping to mentally transport listeners away from their immediate stressors.

The choice of music for stress relief also depend on can personal preference. For instance, some people find classical pieces like Debussy's "Clair de Lune" or soft acoustic guitar tracks to be deeply soothing. Incorporating these into your daily routine—during breaks, after a hectic meeting, or at the end of the workday—can significantly enhance your ability to unwind and recharge.

So there you have it: music is not just music!

To make the best out of music for stress relief and/or focus remember this:

- For focus, select instrumental or ambient tracks with consistent rhythms.
- For stress relief, opt for slow tempos or nature-inspired sounds.







#### Pick a Single Go-To Song

Choose one song
(2–4 minutes) that
you find calming,
energizing, or
uplifting. Keep it
readily accessible
on your phone,
computer, or
streaming app.
Example genres:
instrumental,
acoustic, lo-fi
beats, or your
favorite relaxing
tune.



#### Pause and Press Play

Take a brief
pause from work,
even at your
desk. Put on
headphones
(if needed) to
reduce
distractions.



#### Engage in Micro-Mindfulness

While the song plays, take three deep breaths:
Inhale for 4 seconds, hold for 4 seconds, and exhale for 6 seconds. Focus on one aspect of the music (e.g., melody, rhythm, or lyrics) and let it guide your attention.



#### Do One Mini-Relaxation Task

Combine the music with a mini exercise:

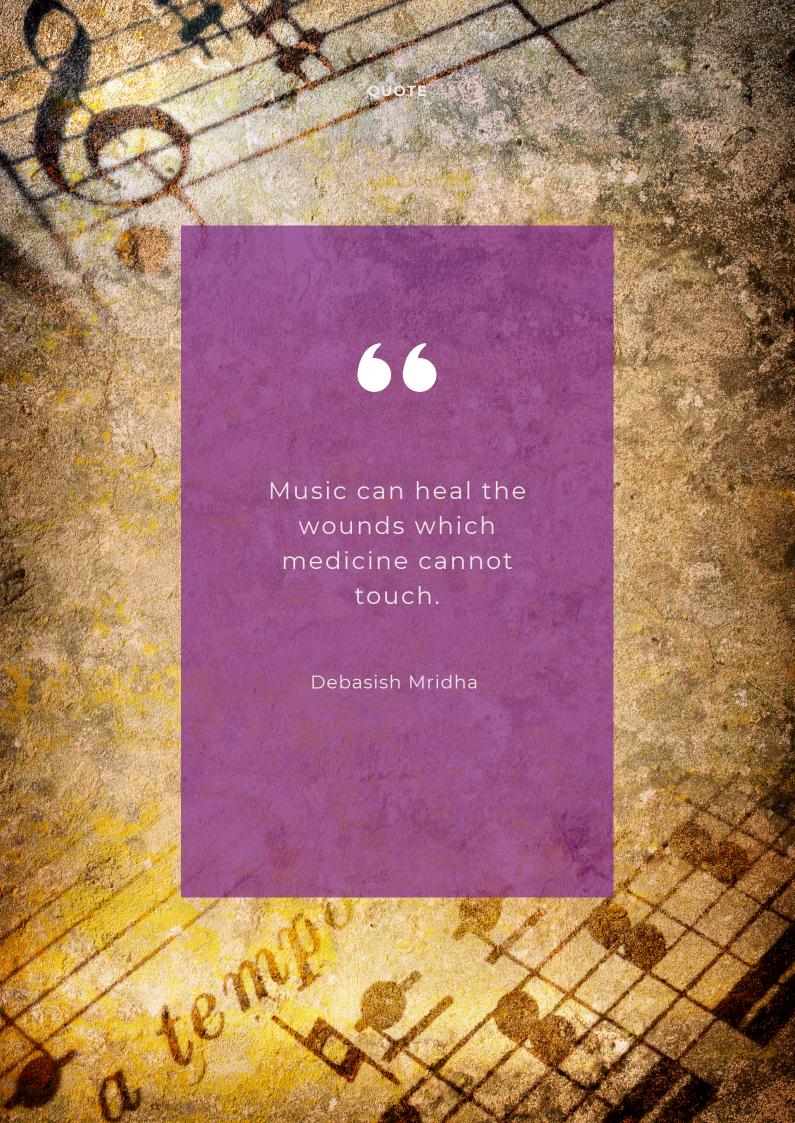
- Roll your shoulders.
- Stretch your neck.
- Close your eyes for a second.
  - Clench and release your fists.



## Reset and

When the song ends, take one more deep breath. Mentally

"I'm refreshed and ready to continue".



# **BEST PRACTICES**

### THE 21-DAY CHALLENGE

As you now know, music affects more than just our psyches, it is known to affect internal functions like blood pressure, speed or slow down your heart rate, reduce anxiety and even help with digestion, amongst many other things. So it makes sense that if we spent more time being attuned to the natural electromagnetic pulses of the earth – at 432 Hz – we would, in turn, feel more centered, balanced, conscious and peaceful.

So are you up for a challenge? For a period of **at least 21 days**, try listening to music tuned at 432 Hz which is the frequency that promotes both love and DNA repair, and track how you feel the next morning.

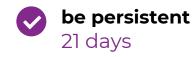


## Key messages

- Music can affect how you feel and how you respond to stress;
- Pay attention to these feelings;
- Record and contemplate on any significant mindset changes;

## Remedy





## PRACTICAL ACTIVITY



#### WHICH SOUNDS BETTER?

The Japanese guitar virtuoso Ichika Nito is known for his unique and complex guitar techniques. Click on the link below to see and hear him playing his song "Orb" using different tuning: in 440 Hz (@00:23) and 432 Hz (@00:57).

WATCH ON YOUTUBE

#### **EXPLORE 432 Hz MUSIC FURTHER**

- Open your digital music provider (e.g. Spotify; Apple music, Amazon music, YouTube, Pandora etc.)
- Look for 432 Hz music
- You will find "Meditation", "Yoga", "Relax", "Sound Therapy" but also "Popular Songs" tuned in 432 Hz

Enjoy!

## **EXPERIENTAL ACTIVITY #1**

# INTEGRATING 432 Hz MUSIC INTO YOUR LIFE

Bring an amazing positive change into your everyday life: from promoting relaxation to increasing your concentration, there are many ways you can benefit from this frequency.

Below are some basic steps you can take to make listening to this type of music one of the better habits in your life. Choose the music that best suits your lifestyle and enjoy its healing effects.



#### **GET STARTED BY:**

- **Daily meditation and mindfulness:** There are a variety of meditation tracks and mindfulness apps that use music at this frequency to enrich your practice and promote your inner peace.
- **Relaxing music for sleep:** If you have trouble falling asleep or are looking for a restful sleep, it can help calm your mind and promote deeper sleep.
- Working and learning environment: Create a harmonious atmosphere in your work or study area by integrating the 432 Hz frequency into your work or study environment. Listening to music in the background at this frequency can help reduce stress and increase your concentration.

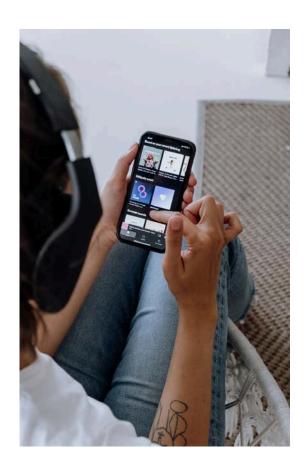
- Tune musical instruments in 432 Hz: If you are a musician orplay a musical instrument, you can switch it to 432Hz tuning. This allows you to compose or play music at this frequency and experience the healing effects directly.
- **Use of sound therapy devices:** Sound therapy devices such as singing bowls or sound forks are also available in 432 Hz. These can be used in therapeutic sessions or for personal meditation to feel the healing energy of this frequency.

## **EXPERIENTAL ACTIVITY #2**

# **Build Your Stress-Relief Playlist**

Managing work-related stress can be as simple as turning to the right music at the right time. Think of your brain as a busy office. Music is the manager that helps everyone coordinate and calm down, ensuring productivity and harmony.

It's time to be proactive. This activity is meant to help you curate a personalized playlist to manage work-related stress in three key areas: relaxation, focus, and mood-boosting. It's fun, creative, and becomes a long-term tool you can use whenever needed.



#### **GET STARTED BY:**

- **1. Dedicate 15–20 Minutes.** Set aside time to create your playlist(s) on your favorite music platform (e.g., Spotify, YouTube, Apple Music).
- **2. Choose Categories.** Divide your playlist into three sections or make separate playlists for each purpose:
  - Relax: Calming music for unwinding after a stressful moment.
  - Focus: Steady, non-distracting music to improve concentration.
  - Mood Booster (Energizer): Upbeat tracks to lift your spirits and reenergize
- **3. Select Your Tracks.** You probably already have them in your existing playlists, so start there. Make way for some "new" jams as well. Follow these simple tips when creating your playlists:

## **Relax playlist:**

- Look for slower tempos (around 60–80 BPM).
- Examples: Classical music, ambient sounds, acoustic ballads, or nature-inspired tracks.
- Sample suggestions: "Weightless" by Marconi Union, "Clair de Lune" by Debussy.

## Focus playlist:

- Opt for instrumental or lo-fi beats with a steady rhythm to avoid distractions.
- Examples: Lo-fi hip hop, soft electronic music, or light jazz.
- Sample suggestions: "Study Beats" playlists or "Time" by Hans Zimmer.

#### **Mood Booster:**

- Choose energetic, upbeat songs that make you feel happy or motivated.
- Examples: Pop anthems, feel-good classics, or energetic movie soundtracks.
- Sample suggestions: "Happy" by Pharrell Williams, "Eye of the Tiger" by Survivor.
- **4. Test Your Playlist.** Play a few tracks in each category to see how they make you feel. Adjust the playlist by removing songs that don't work and adding new favorites.
- **5. Save and Use.** Name each playlist clearly (e.g., "Relaxation Zone," "Focus Time," "Mood Booster"). Keep the playlists easily accessible for quick use during breaks, at work, or after a challenging day.
- **6. Add Personalization.** Include songs with sentimental value or tracks that remind you of positive memories. If you enjoy variety, rotate in new songs every few weeks.

# **KEY TAKEAWAYS**

01

More benefits are gained from music therapy when it is used not as a random activity, but as an intentional strategy to improve health and well-being.

02

There are evidences that 440 Hz the standard tuning chosen only in recent years for practical reasons, rather than for its inherent musical qualities, can make you nervous.

03

Scientific studies found that listening to A=432 Hz lowered anxiety and cortisol levels.

04

Researchers agree that 432 Hz has significant calming effect on the brain, theorizing that the flatter notes are less jarring and easier on the ears.

05

Intentional use of music, such as instrumental tracks for focus or calming sounds for relaxation, is a powerful way to manage stress, boost productivity, and enhance well-being.

# **ASSESSMENT**

01. 02. There is solid evidence that music When we say that a piece of stimulates the production of music is 432 Hertz (Hz), what which hormone? does it mean? A- Prolactin. A- 432 musical vibrations occur per second. B- Dopamine. B- 432 musical vibrations occur per minute. C- Thyroid. C- 432 musical vibrations occur per hour. 03. 04. In which year was the pitch 440 What is Cymatics? Hz standardized as ISO 16? A- 1956 A- the study of how object vibrates. B- the study of visual sound. B- 1990 C- 1975 C- the study of a branch of

math.

# **ASSESSMENT**

05.

Which kind of disease did Kimberly heal by listening to 432 Hz Music?

- A- Insomnia.
- B- Acne.
- C- Myopia.

07.

How does instrumental or ambient music help enhance focus?

- A- By providing lyrical content for better multitasking.
- B- By distracting the brain from the task.
- C- By eliminating linguistic interference and reducing mental clutter.

06.

What is the recommended tempo range of music for stress relief?

- A- 40-50 BPM.
  - B- 60-80 BPM.
  - C- 100-120 BPM.

08.

Which of the following is a scientifically-backed benefit of using music intentionally for stress relief?

- A- Increases cortisol levels.
  - B- Synchronizes heart rate and breathing.
  - C- Disrupts brainwave patterns.

# **ASSESSMENT ANSWERS**

1-B 2-A 3-C 4-B

5-A 6-B 7-C 8-B

# **RESOURCE LIBRARY**

Explore these insightful articles and resources to uncover the healing power of music, including the effects of different frequencies like 432 Hz on heart rate and anxiety, the therapeutic use of music in medical settings, and how music impacts brain waves. Discover interactive experiences like cymatics and curated playlists for stress relief and relaxation.



## MUSIC TUNED TO 440 HZ VERSUS 432 HZ AND THE HEALTH EFFECTS: A DOUBLE-BLIND CROSS-OVER PILOT STUDY

This interesting article provides data suggesting that 432 Hz tuned music can decrease heart rate more than 440 Hz tuned music.

**READ THE ARTCILE** 



# INFLUENCES OF 432 HZ MUSIC ON THE PERCEPTION OF ANXIETY

This study tested the influences of music, as a nonpharmacologic adjuvant, in terms of significant changes for blood pressure. As the data suggests, music therapy is a valid nonpharmacologic adjuvant to anxiety perception in endodontic therapies.

**READ THE ARTCILE** 



#### THE HEALING POWER OF MUSIC

"The Healing Power of Music" is a PBS NewsHour segment that explores the therapeutic use of music in medical settings. It highlights how music therapy aids patients with various conditions, including brain trauma and muscular dystrophy, by improving emotional well-being, enhancing physical coordination, and providing a sense of control.

**WATCH ON PBS** 

# **RESOURCE LIBRARY**

Explore these insightful articles and resources to uncover the healing power of music, including the effects of different frequencies like 432 Hz on heart rate and anxiety, the therapeutic use of music in medical settings, and how music impacts brain waves. Discover interactive experiences like cymatics and curated playlists for stress relief and relaxation.



#### HOW MUSIC IMPACTS THE BRAIN

In this TEDx Talk, the Neuroscientist and musician Alan Harvey takes us on an interactive journey showing live on stage what music does to our brain waves, and explains how music is more than just an entertainment. You've never seen music like this before.

**WATCH ON YOUTUBE** 



#### **SPOTIFY PLAYLIST: "CALM VIBES"**

if you are into Spotify, here's a suggestion for a playlist of instrumental, ambient, and nature-inspired tracks to promote relaxation and stress relief. Check it out!

**LISTEN ON SPOTIFY** 



#### **CYMATICS**

Did you know that the logo and theme art for Eurovision 2022 was based on cymatics? Watching this type of modern art can have a quite soothing effect on your mind. The SoundMadeVisible website is a good place to start your exploration with cymatics. They even have a mobile app that "will help you see the actual geometry of music for the first time".

**SOUNDMADEVISIBLE** 

DOWNLOAD THE CYMASCOPE APP

## REFERENCES

Bernardi, L., Porta, C., & Sleight, P. (2006). Cardiovascular, cerebrovascular, and respiratory changes induced by different types of music in musicians and non-musicians: The importance of silence. Heart, 92(4), 445-452. <a href="https://doi.org/10.1136/hrt.2005.064600">https://doi.org/10.1136/hrt.2005.064600</a>

Chanda, M. L., & Levitin, D. J. (2013). The neurochemistry of music. Trends in Cognitive Sciences, 17(4), 179-193. <a href="https://doi.org/10.1016/j.tics.2013.02.007">https://doi.org/10.1016/j.tics.2013.02.007</a>

Juslin, P. N., & Västfjäll, D. (2008). Emotional responses to music: The need to consider underlying mechanisms. Behavioral and Brain Sciences, 31(5), 559-575. <a href="https://doi.org/10.1017/S0140525X08005293">https://doi.org/10.1017/S0140525X08005293</a>

Koelsch, S. (2010). Towards a neural basis of music-evoked emotions. Trends in Cognitive Sciences, 14(3), 131-137. <a href="https://doi.org/10.1016/j.tics.2010.01.002">https://doi.org/10.1016/j.tics.2010.01.002</a>
Music and health. Harvard Health. Retrieved from <a href="https://www.health.harvard.edu/staying-healthy/music-and-health">https://www.health.harvard.edu/staying-healthy/music-and-health</a>

Ooishi, Y., Mukai, H., Watanabe, K., Kawato, S., & Kashino, M. (2017). Increase in salivary oxytocin and decrease in salivary cortisol after listening to relaxing slow-tempo and exciting fast-tempo music. PLOS ONE, 12(12), e0189075. <a href="https://doi.org/10.1371/journal.pone.0189075">https://doi.org/10.1371/journal.pone.0189075</a>

Pelletier, C. L. (2004). The effect of music on decreasing arousal due to stress: A meta-analysis. Journal of Music Therapy, 41(3), 192-214. <a href="https://doi.org/10.1093/jmt/41.3.192">https://doi.org/10.1093/jmt/41.3.192</a>

Sarkamo, T., Tervaniemi, M., Laitinen, S., Forsblom, A., Soinila, S., & Mikkonen, M., et al. (2008). Music listening enhances cognitive recovery and mood after middle cerebral artery stroke. Brain, 131(3), 866-876. <a href="https://doi.org/10.1093/brain/awn013">https://doi.org/10.1093/brain/awn013</a>

Thoma, M. V., Scholz, U., Ehlert, U., & Nater, U. M. (2012). Listening to music and physiological and psychological functioning: The mediating role of emotion regulation and stress reactivity. Psychology & Health, 27(2), 227-241. <a href="https://doi.org/10.1080/08870446.2011.575225">https://doi.org/10.1080/08870446.2011.575225</a>