

Zen tones, relaxation and concentration

Music and relaxation

The effect of music on the ability to relax

If we take a look at how music has been used for relaxation purposes throughout history, we find that music's ability to affect people in a relaxing manner has been known for thousands of years.



In several classical cultures, music has played an important role in the treatment of illnesses. We know that ancient Greeks used music to heal, and in Arab culture, stringed instrument music combined with the sound of water from fountains was an essential part of the environment in hospitals and therapeutic centres (Mornhinweg, 1992; Musica Humana, 2006).

In modern medical science, where focus has been on accuracy and measurability, this knowledge has been practically forgotten, and it is therefore a relatively new initiative that hospitals and researchers in various parts of the world have started doing tests with music to determine and document music's effect on human beings. Especially the psychological effects of music have been studied intensively, with several positive outcomes. There is now general agreement among researchers that music has the ability to affect people psychologically, making them feel more at ease, more relaxed and less anxious (Hanser, 1985; Staum, 2000). Some studies conducted at hospitals have even shown that the use of music decreased the amount of stress the patients experienced when hospitalised and the amount of pain-killing medicine needed (Musica Humana, 2006).

Beneficial physiological effects

Music's ability to affect people physiologically has been a matter of research. A large number of studies have been conducted. Several of these show that relaxing music has the ability to affect the unconscious part of our system, reducing breathing rate, heart rhythm, chronic stress and blood pressure. Some of these studies have even shown that the effect of music on the ability to relax is higher than the effect of complete silence. In other words, relaxing music seems to make the body relax faster than silence. One of these studies was conducted by Khalfa et al. in 2003. In this study, the researchers measured the salivary cortisol level before and after a stress test. The results showed that in the presence of music, the level ceased to increase after the experimental stressor, whereas it continued to increase for 30 minutes in the presence of silence. Similar results were obtained by Scheufele (2000). Scheufele found that listening to music seemed to distract the listeners from the experimental stressor and resulted in a slower heart rhythm than in the subjects who were exposed to silence subsequently to the experimental stressor.

Important musical components

Despite the fact that it is individual whether a piece of music is relaxing or not, there are some musical components that seem to be decisive. One of these is the basic rhythm - a fast basic rhythm seems to result in a faster heart rhythm and pulse rate, and a slow basic rhythm in a slower heart rhythm and pulse rate. Besides that, there are indications that volume and intensity may have an equally strong effect, so that a higher volume generally results in a faster heart rhythm. Not all studies have found this to be the case, however. The discrepancies may be due to a personality factor. Several studies have shown that extroverts prefer and are able to handle larger amounts of auditory stimuli than introverts and prefer a higher volume level than introverts. This is because extroverts use the music to raise a naturally low level of arousal (Staum, 2000; Rickard et al., 2005).

The same fundamental considerations as for heart rhythm seem to apply to the breathing rate. A calm musical rhythm is more strongly associated with calmness and relaxation, while a faster rhythm is connected with activation and maybe stress and anxiety. Furthermore, the breathing pattern seems to be directly influenced by the emotional content of the music, so that pieces of music evoking strong feelings and emotions may lead to large variations in the respiration pattern (Myskja, 1999).

Music and concentration

The ability of music to improve concentration in unwanted noise

Music's ability to improve concentration has also been an object of study. One area of focus has been the effect of background noise on the performance in different cognitive tasks. Not unexpectedly, noise has turned out to be a source of stress and negatively affect concentration and productivity (Furnham et al., 2002). This finding has been especially interesting for companies with open-plan offices, as the biggest advantage of this setup – i.e. the possibility of free communication – has also turned out to be the biggest disadvantage. Several initiatives have been introduced to overcome this problem and enhance the individual's productivity and ability to concentrate in such environments, including rearrangement of furniture, white noise masking and the use of background music (Kallinen, 2004).

Background music

The use of background music in connection with the performance of different tasks has been the aim of many studies. Type of music is a factor that seems to be relevant when trying to define music's ability to mediate concentration in a noisy environment. The literature reports that soothing music, rock music and classical music are all types of music that in some way can influence a person's ability to concentrate on a specific task. Researchers have tried to determine whether the complexity of music is a possible factor. For example, Kiger (1989) concluded that scores on a reading comprehension test were higher under conditions with low-information music than with silence or high-information music (Kiger, 1989, cited in Furnham et al., 2002).



Other factors that seem to be of importance if music is to facilitate concentration are level of arousal and personality. Some studies have shown that using preferred music as background sound will enhance task performance. With this starting point, several researchers have investigated the influence of background music on different personality types' ability to concentrate. Several arrived at the same result, namely that listening to background music with low information load will often enhance concentration on a task, although the way music will influence the listener differs with personality and preference for type of music. More specifically, background music can be distracting for introverts as their optimal arousal level is quickly exceeded, whereas it is stimulating for extroverts (Furnham et al., 1997; 2002).

Reviewing the literature, it does seem that music has the potential of facilitating concentration when presented in the right way to the listener. In many studies, if the music is relaxing, it will produce results in the area of concentration and task performance. To facilitate concentration it seems that the information load of the music should be low. Furthermore, being able to adjust the volume and individualise the music to meet the listener's musical preference appear to be important factors too.

The Widex Zen™ program

In the Widex Zen™ program, we have tried to accommodate as many of the above-mentioned factors as possible.

Concentration seems to improve if the information load of the music is low. Being able to adjust the volume and individualise the music to meet one's own musical preference appear to be important factors too.

For relaxation to be obtained, it looks as if the basic rhythm should be relatively slow and that elements evoking big emotions in the listener should be avoided. Adjustable volume is also important to accommodate the many individual preferences, and the listener should be given a choice of different pieces of music. Besides that, it seems essential that the music is rather predictable without sudden changes.



The picture is an illustration of a fractal: A fractal is a shape that can be split into parts, each of which is (to a large extent) a reduced-size copy of the whole.

In the Widex Zen™ program, the music is based on fractal technology, which ensures that the music is rather predictable without repeating itself. The user has a choice of "musical tones" called Zen styles, and it is possible to further individualise these by adjusting the tempo and pitch of the styles. The music consists of sequences of tones with no lyrics to avoid large emotions in the listener.

The volume can be adjusted in Compass or by using the volume control on the hearing aid. Furthermore the Zen™ program also includes a setting where the microphone sound is deactivated and only the Zen tones are played.

To make sure that the Zen tones are audible at all times the Zen™ program takes the individual hearing loss and the background noise into consideration when generating the fractal music.

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