

**A Study Investigating the Relaxation
Effects of the Music Track *Weightless*
by Marconi Union in consultation
with Lyz Cooper**

RADOX SPA/MISCHIEF PR

OBJECTIVE

The aim of the study is twofold. Firstly to validate the claim that the new track 'Weightless' by Marconi Union (commissioned by Radox Spa) is more relaxing than other music tracks that are considered relaxing and secondly to compare the relaxation effects of a massage with the Radox Spa track.

INTRODUCTION BY DR DAVID LEWIS - AUTHER OF *ONE MINUTE STRESS MANAGER*

'Music has charms to sooth a savage breast,' wrote the 17th century poet William Congreve, in his poem *The Mourning Bride*.

This new study for Radox confirms the truth of his words. Certain pieces of music do indeed possess the power to calm even the most stressed out individuals by soothing frazzled minds and relaxing bodies. The study confirmed certain music has the capacity to lower heart rate, slow breathing and decrease levels of the stress hormone 'cortisol' in the blood. Other researchers have reported that music can also speed recovery from surgery and help overcome anxiety and depression.

How can music exert such a powerful effect? Brain imaging studies have shown that music works at a very deep level within the brain, stimulating not only those regions responsible for processing sound but also ones associated with emotions. When listening to music we engage both the logical left and artistic right sides of our brain, which is why it can exert surprising and positive benefits, not only in combating daily stress but also in aiding such mentally challenging activities as memorising, learning a language, focusing attention and developing physical coordination.

One of the reasons for relaxing qualities of certain pieces of music is that they stimulate production of the 'feel-good' chemical dopamine. This neurotransmitter is usually associated with more basic pleasurable rewards such as food, drugs and sex.

So the next time you need to manage your relax, no need to comfort eat on a chocolate bar or pop a pill. Just put on the right piece of music, such as *Weightless* by Marconi Union, sit back in a comfortable chair, close your eyes and chill out to the soothing beat.

SUMMARY

- 'Weightless' by Marconi was able to induce greater relaxation levels in participants than a massage (increase of 6%).
- 'Weightless' also induced an 11% increase in relaxation over all other relaxing music tracks.
- Whilst the massage was enjoyed by all participants, it induced greater EDA levels and unsteady respiration rates indicating levels of stimulation rather than relaxation.
- 'Weightless' was also subjectively rated as more relaxing than any other music by all the participants.
- Complimentary Mindlab research shows that music also has a greater ability to induce relaxation than having a cup of tea, going for a walk and playing video games.

METHODOLOGY

A long list of relaxing music was compiled using online rating polls and music critic blog sites. This list was subjectively rated by 10 people and a final shortlist of tracks spanning classical, pop and ambient genres was chosen for testing (see appendix 1 for list of tracks).

Marconi Union was commissioned by Radox Spa under guidance of professional sound practitioner, Lyz Cooper to create a piece of music specifically designed to lower heart rate and relax the listener. The track produced is called *Weightless*.

A fully trained and qualified massage therapist was commissioned to take part in the lab study giving each participant a back, neck and shoulder massage focusing on the pressure points to help relieve tension and encourage relaxation. The massage lasted around 10 minutes. Therapeutic massages were avoided as they are given to patients for specific purposes other than purely relaxation.

PROCEDURE

Experimental work was conducted at the Mindlab laboratory based at the Sussex Innovation Centre in Brighton.

20 female participants aged between 18 and 61 with an average age of 37 completed the study, one at a time. After signing an informed consent form they were connected to bio-monitoring equipment to monitor heart rate variability, skin conductance (EDA) and respiration (breathing) rate. All data was recorded using a Nexus10 biofeedback system (Mindmedia).

Participants were sat comfortably in a distraction free room. The music was presented using Bose over-ear noise cancelling headphones. Each music track was played for 3:00 minutes with a period of silence afterwards. In between each track, auditory and visual distracters were played / displayed to induce stress.

The track order was randomised between participants. After each track, participants were asked to rate the music on a scale of -5 to +5 for relaxation, with +5 being most relaxing. After the music session, participants were played another distracter then underwent a massage from a professional massage therapist. After a final distracter, Marconi Union's 'Weightless' was played in full to allow a direct comparison to the massage.

Heart Rate: Analysis is based around speed of recovery after the distracter has been in relation to the average heart rate obtained across each individual session within the experiment.

Respiration Rate: In a similar manner to heart rate; the slower and more steady the respiration rate becomes, the more relaxed the participant can be considered to be. Fast, shallow, irregular breaths can be linked to stress which is a major inhibitor of relaxation.

Skin Conductance (EDA): This measures autonomic arousal (stress and excitation levels in the body), signifying mental stimulation. The greater the reduction in an EDA reading as well as the steadiness of the reduction identifies increasing relaxation. Higher EDA readings as well as successive spikes or uneven recordings indicate stress.

These measures were analysed for each participant during each activity and then the results were combined to give an overall 'relaxation percentage score'. A comparative score could then be applied to each music track and the massage. The numbers used in the scoring are comparable to one another. However it should be noted that they are arbitrary numbers and the calculation is designed as an illustrative comparator between scores. The relaxation ability of each stimulus has been scored as a percentage. This percentage is in relation to a maximum relaxation level (at 100%). This maximum has been created from data within the test results rather than from any 'standardised' set of parameters. Maximum relaxation has been taken individually for each participant. Maximum relaxation is considered to be at the lowest heart rate achieved, the lowest respiration rate achieved and the lowest EDA score achieved.

COMPLIMENTARY EXPERIMENT RESULTS

Mindlab research (2009) has shown that listening to music can be an effective method of relaxation (see appendix 2). A study compared different types of relaxing activities after participants had undertaken stressful activities.

This research has indicated that listening to music is effective in inducing relaxation, helping to substantially reduce heart rate. Stress levels in relation to heart rate were decreased by 18.6% as a result of listening to music after participants were stressed by a range of activities, compared to drinking cup of tea (16%) or taking a walk (7%).

Stress was also measured using EDA. When measured from a baseline taken before and after stressful activity, listening to music reduced stress levels by 61%, compared to 54% when drinking tea and 42% when walking, as seen in figure 1.

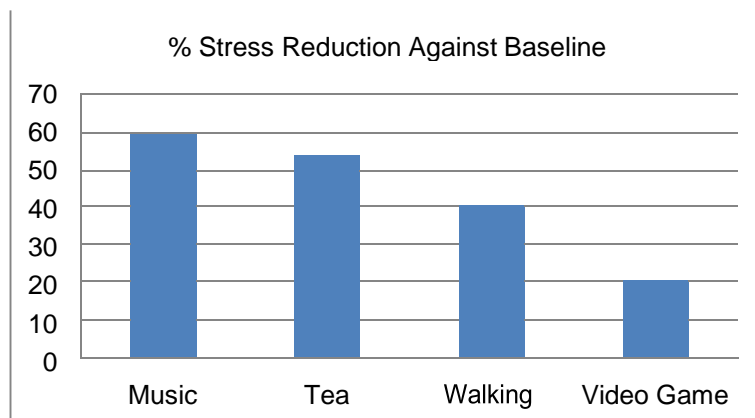


Figure 1. Mindlab research on stress relieving activities (2009)

RADOX SPA EXPERIMENT RESULTS

Changes in the biometric measures of heart rate, respiration rate and EDA during activities indicate changes in mental and physical relaxation and stress levels. These three measures are combined to create an overall relaxation score. The results are shown below:

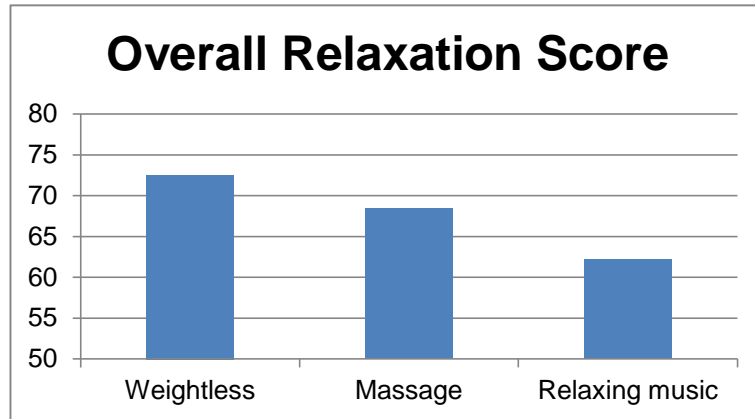


Figure 2: Overall relaxation results

The results clearly show that the track *'weightless'* induced the greatest relaxation. Massage was found to be more relaxing than the relaxing tracks with the exception of weightless. Weightless managed a relaxation score of 73%. This equates to an increase over other music of nearly 11% as well as a 6% increase over the massage.

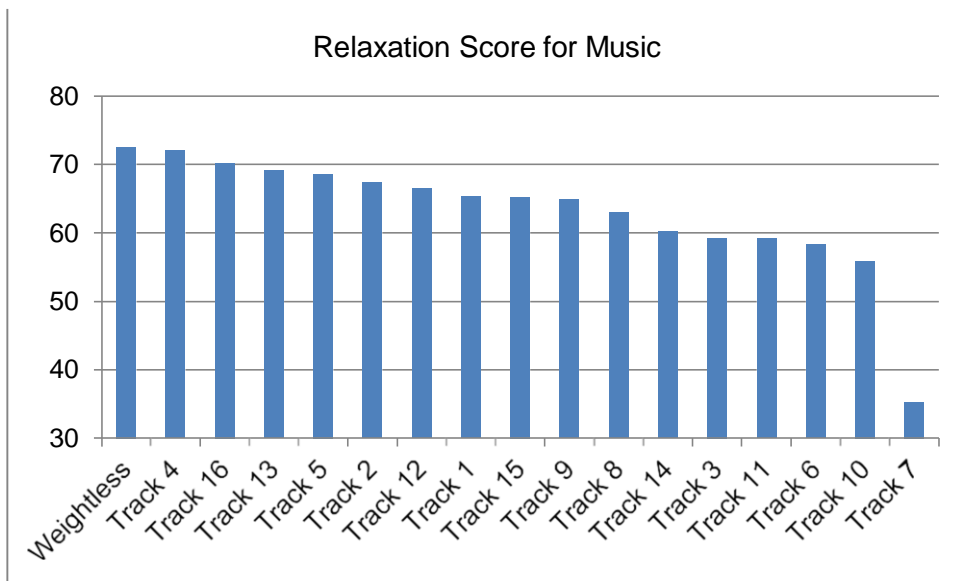


Figure 3: Biometrically calculated relaxation score for all music tracks

Figure 3 shows the relative relaxation levels for all music tracks using physical biometric data. *Weightless* induced the greatest relaxation of all tracks played.

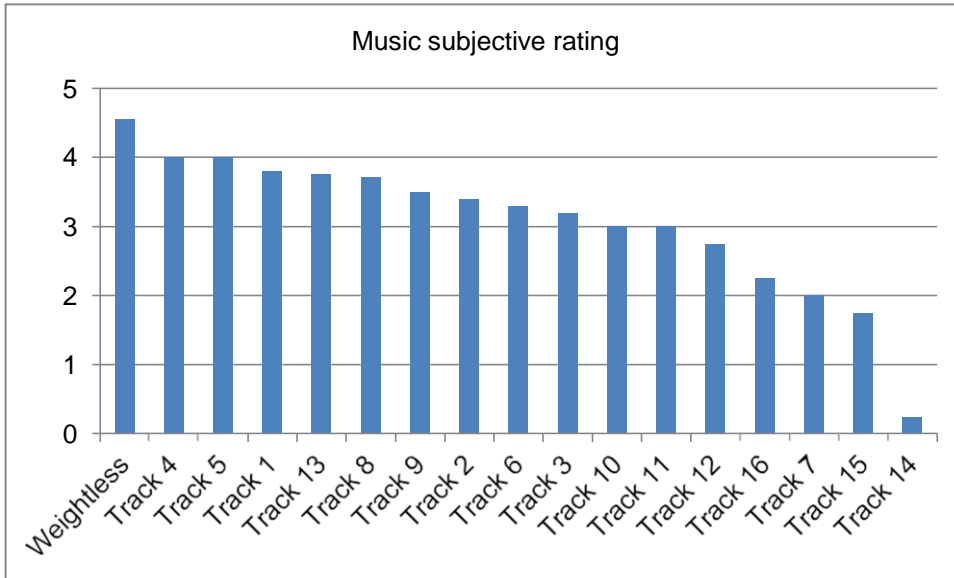


Figure 4: Subjective ratings of the music played to the participants

After each track, participants were asked to rate the music on a scale of -5 to +5 for relaxation, with +5 being most relaxing. These results show that participants considered all of the tracks relaxing (all were above 0). The results in figure 4 also show that *Weightless* was clearly considered the most relaxing track.

All participants reported that they found the massage very relaxing however massage is more than just a systematic manipulation of soft tissues. There is an intrinsic human factor too. Research (Creiger, Tappan 1988) has shown that the human touch alone can be truly beneficial. There are also links between expectations of massage and pain relief. The modern day effects of stress can stem from and are associated with lack of support and feelings of rejection so it is understandable that the comfort of the human touch increases reported increase in relaxation.

APPENDICES

Appendix 1 – Relaxing tracks tested

Music chosen for the test:

Track 1: Adele - Someone Like You

Track 2: Barcelona - Please Don't Go

Track 3: Morcheba - Undress Me Now

Track 4: airstream - Electra

Track 5: Coldplay - Strawberry Swing

Track 6: Massive Attack - Teardrop

Track 7: Sigur Rós - Sæglópur

Track 8: Air - All I Need

Track 9: Café Del Mar - We Can Fly

Track 10: Jack Johnson - Upside Down

Track 11: Moby - Porcelain

Track 12: All Saints - Pure Shores

Track 13: Enya - Watermark

Track 14: Katie Melua - Nine Million Bicycles

Track 15: Mozart - Canzonetta Sull'aria

Track 16: DJ Shah - Mellomaniac (Chill Out Mix)

Appendix 2 – previous research

<http://www.telegraph.co.uk/health/healthnews/5070874/Reading-can-help-reduce-stress.html>

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