



A User's guide to MindReflector® Training

Thomas E. Fink, Ph.D.

The brain's electroencephalogram (EEG) reflects the electromagnetic behavior of the brain, which is correlated with many important psychological functions. These correlations and relationships are complex and varied. For example, the EEGs of people who have been brain damaged often have higher than expected amplitudes of low wave (delta) activity, as well as higher than normal degrees of variability, sometimes at specific locations on the scalp. The EEGs of people who are anxious may have higher than expected overall amplitude measurements, as well higher than expected amplitudes in several specific low and high bandwidths. The EEGs of people who do not concentrate or focus well often lack sufficient amplitude in a particular bandwidth, low beta, and also may have high amplitude readings in several specific low and high frequency bandwidths. And, in general, the EEG patterns of people who appear to be stuck in repetitive patterns of thought and behavior often lack variability and complexity in their EEG patterns.

Interestingly, the brain's EEG is easily altered by properly timed auditory, visual and, sometimes, nonvisible electromagnetic feedback, which, when applied on a regular basis, may lead to lasting positive changes in a person's characteristic EEG patterns. This feedback appears to interrupt stuck brain patterns and encourage more positive brain wave patterns that are correlated with relaxation, calmness, focus and concentration, and the trait of being open, responsive and flexible in thinking

Since the late 1950's, psychologists have been studying these brain-behavior relationships and how to effectively alter the brain's EEG patterns through feedback. Until recently, it has only been possible to carry out EEG Biofeedback, or Neurofeedback, with electrodes that are attached to the scalp with conductive paste, which then channel information about the brain's electromagnetic behavior to a computer via wires and intermediary amplifiers and encoders. This has limited individual home use of Neurofeedback because this type of set-up is awkward, expensive, and prohibitively difficult to accomplish alone.

With the advent of the NeuroSky microchip, which reliably measures a broad range of the brain's electromagnetic activity, and the development of the MindWave headsets, which wirelessly transmit this information to a computer, home Neurofeedback training has become a reality. Using MindReflector® software and the NeuroSky MindWave headsets, it is now possible to obtain an inexpensive and easy-to-use home training system that applies Neurofeedback-training protocols that have been used for many years to help people optimize their mind-brain function.

MindReflector® training does not involve medical or neurological manipulations of the brain, but deals in a helpful way with the overall behavior of the brain such as is reflected in all human behavior and thought. Our brains are always changing in response to the information we receive from our environment. EEG training is a way to alter the behavior of the brain more directly and positively through specific information about the electromagnetic activity of our brains.

MindReflector® offers four simple-to-use EEG biofeedback-training protocols. The four protocols available with MindReflector® support **calmness**, **attention**, **deep relaxation**, and **flexibility** and **openness**. During training a person hears sounds and, with eyes-open, sees visual effects that change when the behavior of the mind/brain changes in preferred ways. This information reinforces and educates the mind about how to achieve desired states. Regular use of MindReflector® training also appears to help people more easily change their mental states on their own.

How do I start a training session?

To start a training session, choose the desired protocol by going to the **File** button in the upper left hand corner of the MindReflector® **Control** screen. Clicking **File** displays a drop-down menu with a choice of **Options**, which, when clicked, will then produce a screen from which you can choose a training protocol, **Quiet Focus**, **Meditative Relaxation**, **Full Spectrum** or **Alpha/Theta** training. It is also possible to choose your training feedback from this screen. There is a default audio-visual option in the MindReflector® software, but by clicking on the **Select New** button in the **Options** screen, you will access Windows Media Player and other audio-visual choices available to you. Additional audio-visual options may be accessed from the **Multimedia** link on the home page of www.mindreflector.com.

What protocol should I chose?

Recent Beta testing with the MindReflector® protocols indicated that all four training protocols support *relaxation* and *calmness*. Increased *focus* occurred, in particular with the **Quiet Focus** training, as intended. Increased *focus* also has been noted to occur with **Full Spectrum** training. **Quiet Focus** training also provides support for the capacity to be in the present moment. **Meditative Relaxation** also can lead to increased feelings of *peacefulness* and has been useful for a number of users to increase their ability to sleep longer and more restfully.

Full Spectrum training is designed to encourage *openness* and *flexibility* in mind/brain functioning. Users of the **Full Spectrum** protocol indicated it initially was more difficult than the other three protocols, but, after adjusting the difficulty bar, most felt it became easier and was enjoyable. **Full Spectrum** users also indicated that this protocol led to increased feelings of being *centered*.

Alpha/Theta training is a protocol with a long history of use in the Neurofeedback community. It was added to the MindReflector® protocols as a training procedure designed to support states of *deep relaxation* and *calmness*. Users of the MindReflector® **Alpha/Theta** protocol indicated that they enjoyed this procedure in particular, which also supported increased feelings of improved *focus* and *peacefulness*.

Users of MindReflector® are encouraged to try any of the protocols. The protocols are educational in intent and designed to support users' wellness. MindReflector® does not treat any mental health disorder and persons with concerns about their psychological condition should consult a licensed mental health practitioner. If a person feels uncomfortable using a particular protocol, they are encouraged to discontinue or take a rest from using that protocol. Persons with interest in Neurofeedback treatment are encouraged to seek a provider with experience and credentialing in the use of EEG biofeedback for treatment purposes.

What should I use for feedback?

A default audio-visual display on a personal computer may be used for any of the training protocols. There are other audio-visual options available from the **Multimedia** link on the MindReflector® website that users are invited to load into their Windows Media Player. In addition, users are encouraged to customize the feedback they receive by using the many options available through Windows Media Player. Users can easily load their own videos, preferred music, or even AVI-formatted movies into Windows Media Player, making them available through the MindReflector® **Select New** options window.

The specific feedback a user selects may be tailored to the training protocol being used. For **Meditative Relaxation** or **Alpha/Theta** training, calming music and nonspecific visual screens work well for adults and some children. **Antumbrel**, an audio-visual selection available from the MindReflector® **Multimedia** link, is a particularly useful additional feedback selection. Users are encouraged to explore the options made available from the MindReflector® web site. Other users may prefer using their own videos or other choices available on line or from their personal libraries. Some users of **Quite Focus** training have indicated they prefer action visualizations such as are available with movies, shows, or cartoons. A variety of public domain materials may be obtained from the internet, in addition to a user's own audio-visual library.

Should training be carried out with eyes open or closed?

Eyes-closed is the recommended option for **Alpha/Theta** training and eyes-open is generally recommended for **Quite-Focus** training. Many users prefer eyes-closed for **Meditative Relaxation** training and either option is workable for **Full Spectrum** training. However, as an individual educational training system, MindReflector® training can be safely implemented as the user prefers, with eye open or closed during part of or for the entire session.

How long should my training session last?

You can monitor the time of your training session with the built-in timer on the **Control** screen. Training can vary from as briefly as five or 10 minutes to up to 30 minutes or more. Generally children are trained with briefer training sessions. Adults can train for longer periods of time without boredom or fatigue. Training sessions of 15 – 20 minutes is generally recommended.

How often should I use MindReflector®?

Daily use of the protocols is desirable at the beginning of training. With practice, you can learn to change the state of your mind to a desired outcome more easily. Once a person learns how to relax, focus, or generally change their mental states, daily use may not be necessary. Effectiveness and speed of learning, of course, varies from person to person. After a person learns to relax during training, they are encouraged to begin to try to “self-regulate,” that is to learn to guide themselves into those states without using MindReflector®. Some users have incorporated the **Meditative Relaxation** protocol into their preparation for sleep, although others have experienced improvement in sleep even when MindReflector® training is done earlier in the day.

How difficult should I make the session?

The difficulty bar on the upper right side of the MindReflector® control screen allows adjustments in the difficulty of training from **0** to **10**. Most users can begin training at levels between **2** and **3**. With practice, the difficulty level can be increased. During training, choose a difficulty level that is not frustrating, but which has enough interruptions in feedback so a change in EEG behavior is encouraged. Users are encouraged to experiment with the difficulty level that they find most comfortable. Most practitioners in the field of EEG Biofeedback prefer positive reinforcement or feedback ratios of 80 – 85 percent.

What effects can I expect to experience?

Beta testers have reported many positive responses to training. These responses have included improved attentiveness, focus, and concentration; increased relaxation, peacefulness, and calmness; and feeling more confident, determined, centered, clear, integrated, and happy. Negative responses have been few and were typically related to frustration and irritation due to setting the difficulty level too high, or feeling bored with the feedback. Both these problems can be remedied through simple clicks of the mouse. Frustration and irritation can easily be overcome by adjusting the difficulty level of the training protocol. If feedback becomes boring, it can be customized by using Windows Media Player to change the audio-visual display. The MindReflector® protocols are easy to use and gentle in effect. We are pleased to report improved calmness and sleep by a number of the MindReflector® users.

Some of the effects of MindReflector® training may be easily noticed, as in the induction of states of relaxation or improved attentiveness or focus. However, other effects, such as improved flexibility in thinking or increased ability to change state, may be less obvious. These latter effects may be observed in secondary behaviors, such as the ability to fall asleep more easily or to let go of negative feelings.

It is not unusual for a user to feel tired during or after MindReflector® training. This is a transitory effect, unless it is bedtime. During the day, this effect will dissipate and a number of users have reported feeling less fatigue and more alert later in the day.

When can I discontinue MindReflector® training?

In a stressful world, it may be beneficial to integrate some form of relaxation training into one's daily routine. How to do this is an individual choice. Once you have practiced for a period of time with MindReflector®, it should be easier to achieve desired states such as relaxation and attentiveness on your own. However, episodic use of the MindReflector® protocols may help maintain the gains you have achieved.