GUIDE

Trauma: Memory Consolidation

Neuroscience research on memory has expanded our understanding of how the brain stores experience. This process, memory consolidation, creates the template for how we will feel, think and behave when again encountering a similar experience. The advantage: we don't have to reinvent the wheel. The disadvantage is that we can become stuck responding in emotionally painful ways that diminish our ability to successfully negotiate the new challenge.

The good news is that this storage process, memory consolidation, can be hacked: the emotional component accompanying an event, usually attached to the event's visual experiences, can be relearned by targeting associated sights and sounds.

When an event is traumatic, memory consolidation often results in storing an emotionally distressing group of images which can emerge afterwards as flashbacks. These flashbacks are triggered when encountering new events that resemble components of the earlier event. Flashbacks are the primary building blocks for emotional upheaval and maladaptive response, key components of acute and post-traumatic stress disorder.

The hacking process: within 72 hours of experiencing a traumatic event, engage in a demanding visuospatial exercise for 20+ minutes. Initially, at least 10 minutes, followed by at least another 10 minutes.

Research studies have identified which exercises block flashbacks. These need to include viewing/interacting with the animation, for example, playing a video game, which results in placing high visuospatial demand on the person.

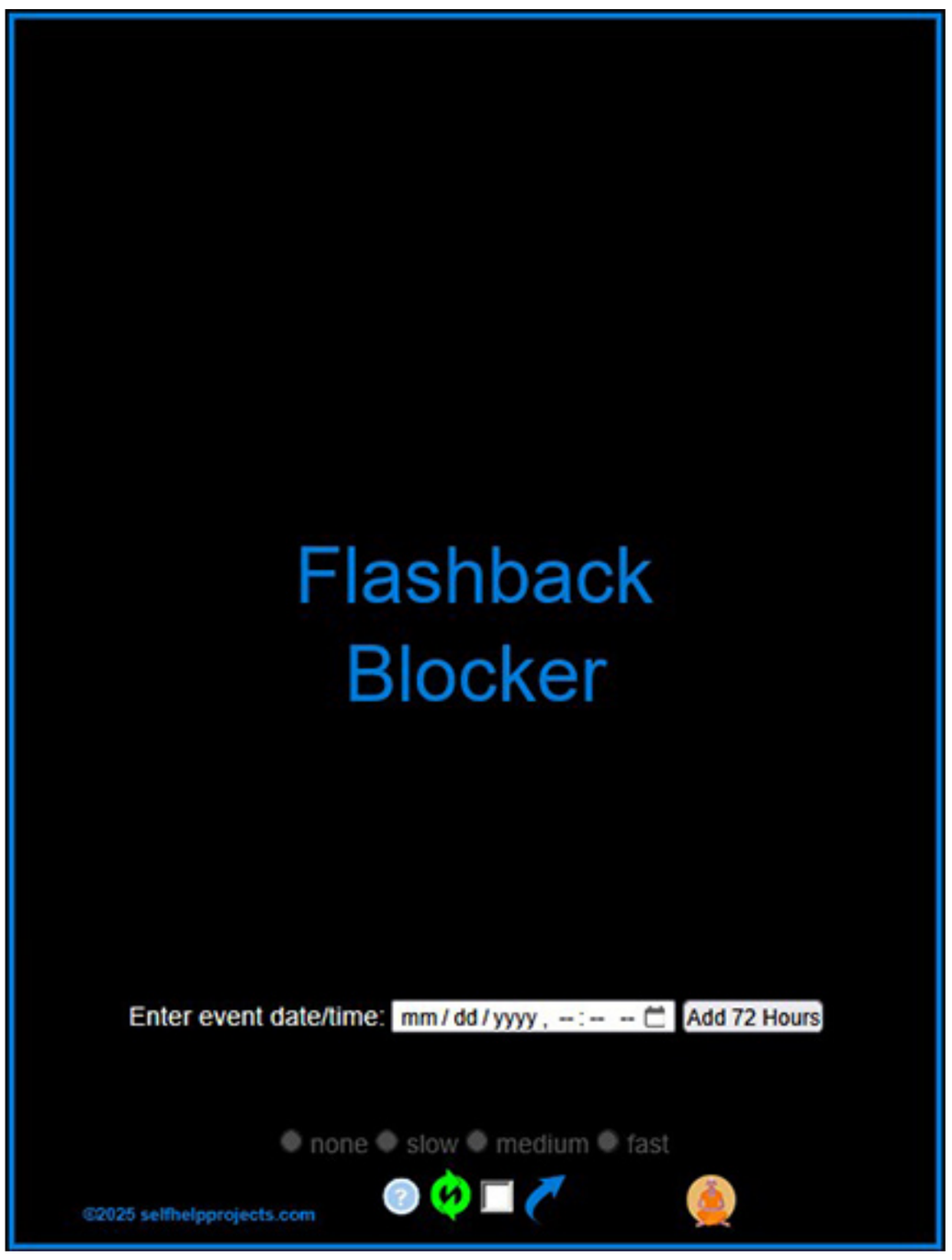
The Flashback Blocker is designed to maximize these features. It achieves high visuospatial demand through (1)pattern matching, (2) increased pressure to get the best score, (3) overcoming obstacles, (4) splitting attention using competing screen images and sounds, (5) incentivizing complex visuospatial interactions including visualizing/rehearsing game movements in the mind's eye using double- or triple-weighted scores (see angled play below).

A word about on-going, repeated traumatization, referred to as "complex trauma" (Herman, 1992; Courtois, 2008). It is characterized by continuing exposure to traumatizing events (for example, domestic violence, sexual abuse) and help for resulting traumatization is best addressed by a healthcare professional. Flashback prevention using the Flashback Blocker app is designed for use after a single traumatic event and not for complex trauma.

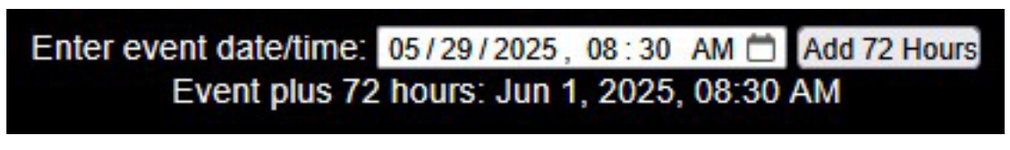
Protocol

Time window: complete exercise (20+ minutes of game play) up to 72 hours following event.

Game Options



landing screen



event tracker

add rows

help pdf

Reset high score (the user's best score to beat when playing) to 0

or

Check box, unchecked for basic aiming pointer and checked for a predictive trajectory line for angled play: bouncing the shot ball off of the right- (double score), or left- (triple score) side.

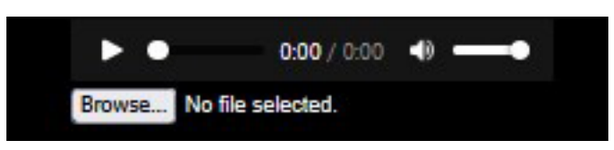
navigate forward

stress reduction using breath pacing

game screen: features

start over

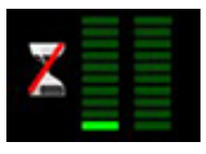
screen lock (only in mobile version)



bilateral sound (requires stereo headphones or speakers). Use your own sound or download an mp3 from the Resource section @ https://www.selfhelpprojects.com.

bilateral visual

timed reset bar (slow and fast options)



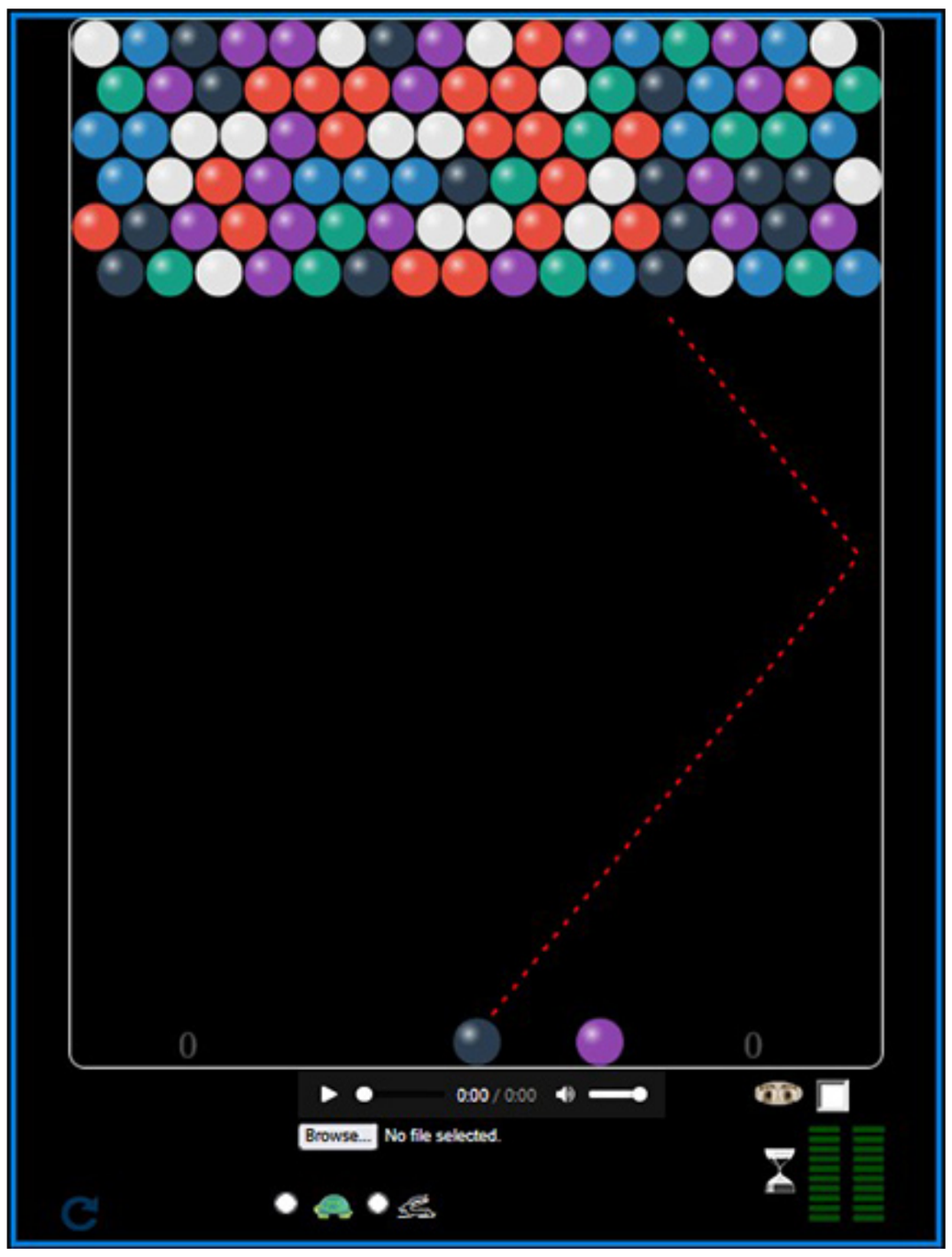
20 minute timer

Gameplay

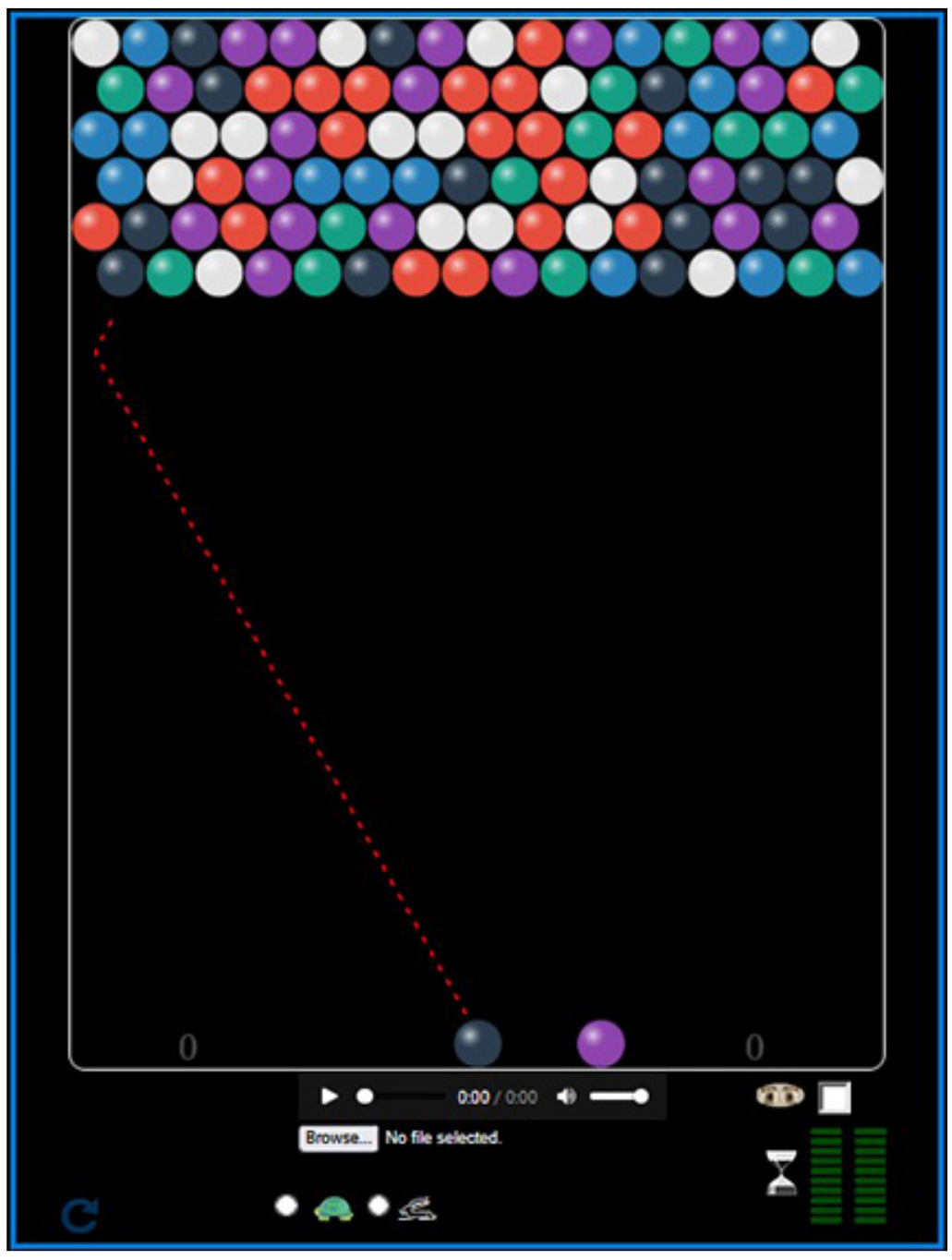
If speed level selected, a new row will be added every 10 (slow), 6 (medium) or 3 (fast) shots; if slow or fast reload is selected, the screen will reload every 120 (slow) or 60 (fast) seconds.

Shots that hit 2 or more same color balls will remove them and score points. Play until all balls are removed.

Maximize angled play (shooting a ball towards a wall to bounce it back into the playing field) to maximize mental rehearsal and shooting. Make a right-side angled shot and earn two times the points (symbol displays on right-side). Make a more challenging left-side angled shot and earn three times the points (symbols display on left- and right-sides).This process activates key visuospatial skills beneficial to achieving flashback blocking.



right-side angled play (double score)



left-side angled play (triple score)

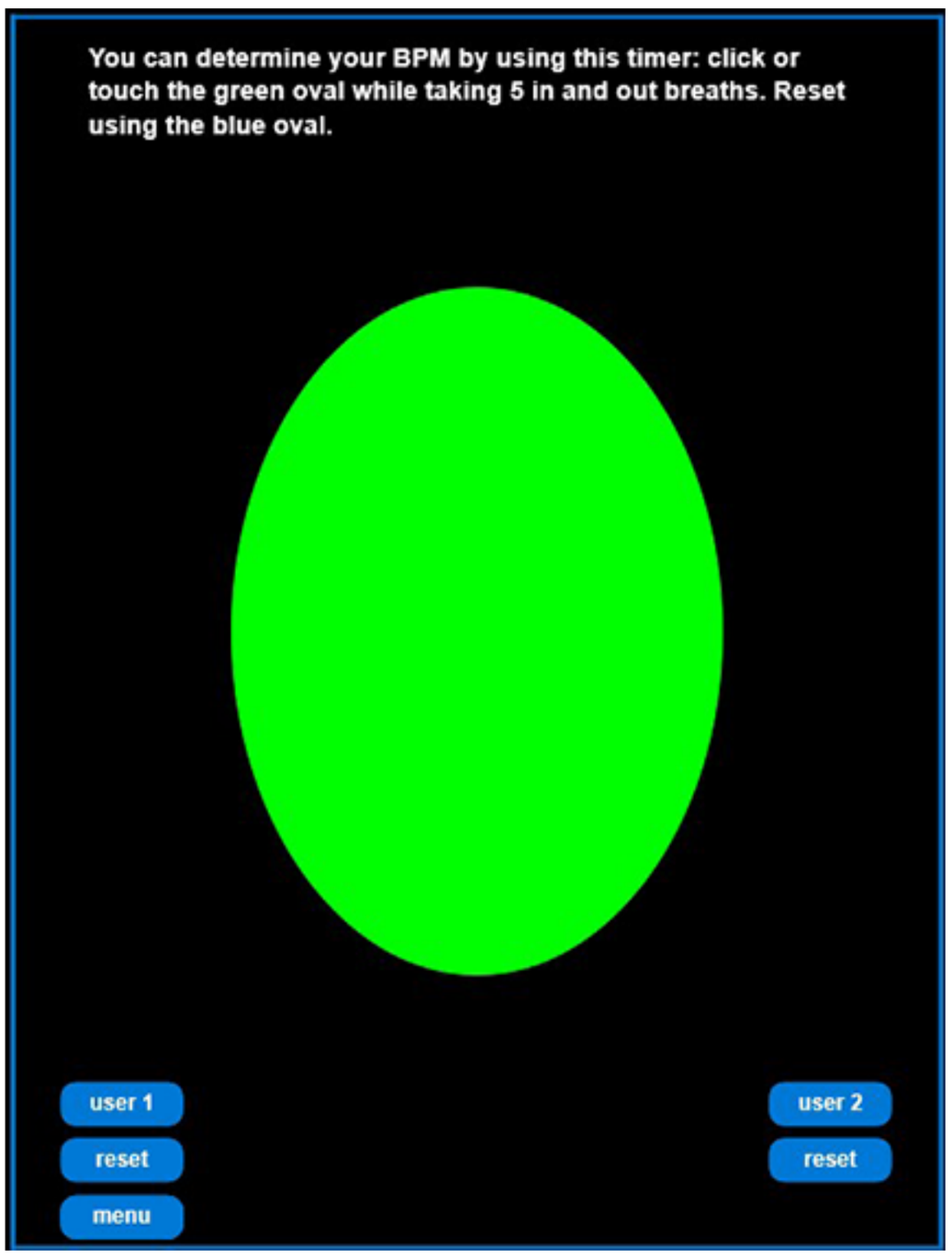
Safe location where you will be undisturbed during gameplay.
Before starting visualize event hotspots.
Reduce intolerable stress level using breath pacing.
Start

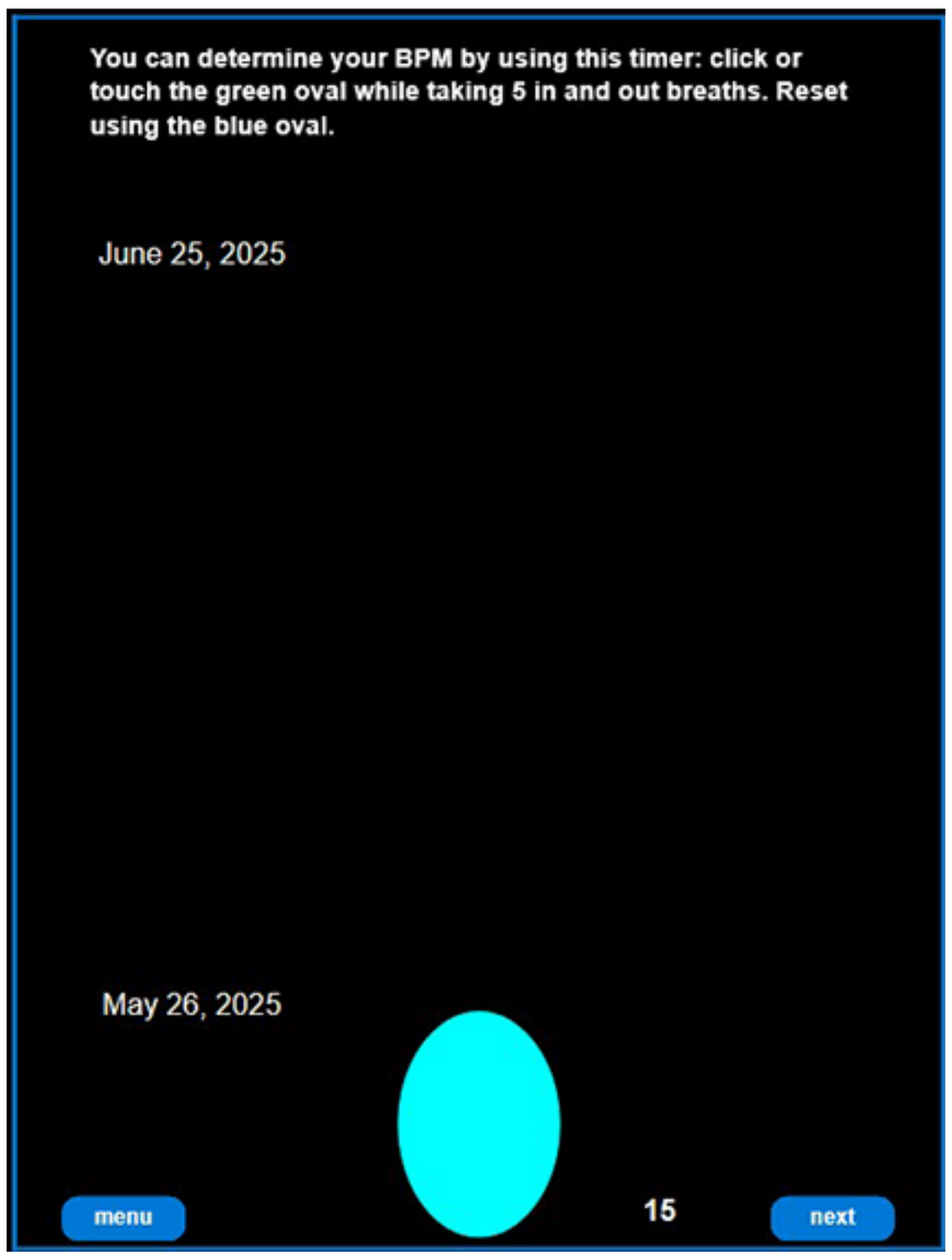
20+ minutes game play: begin with a minimum time block of 10 minutes, then add game-play minutes, within the 72-hour time window, to total 20+.

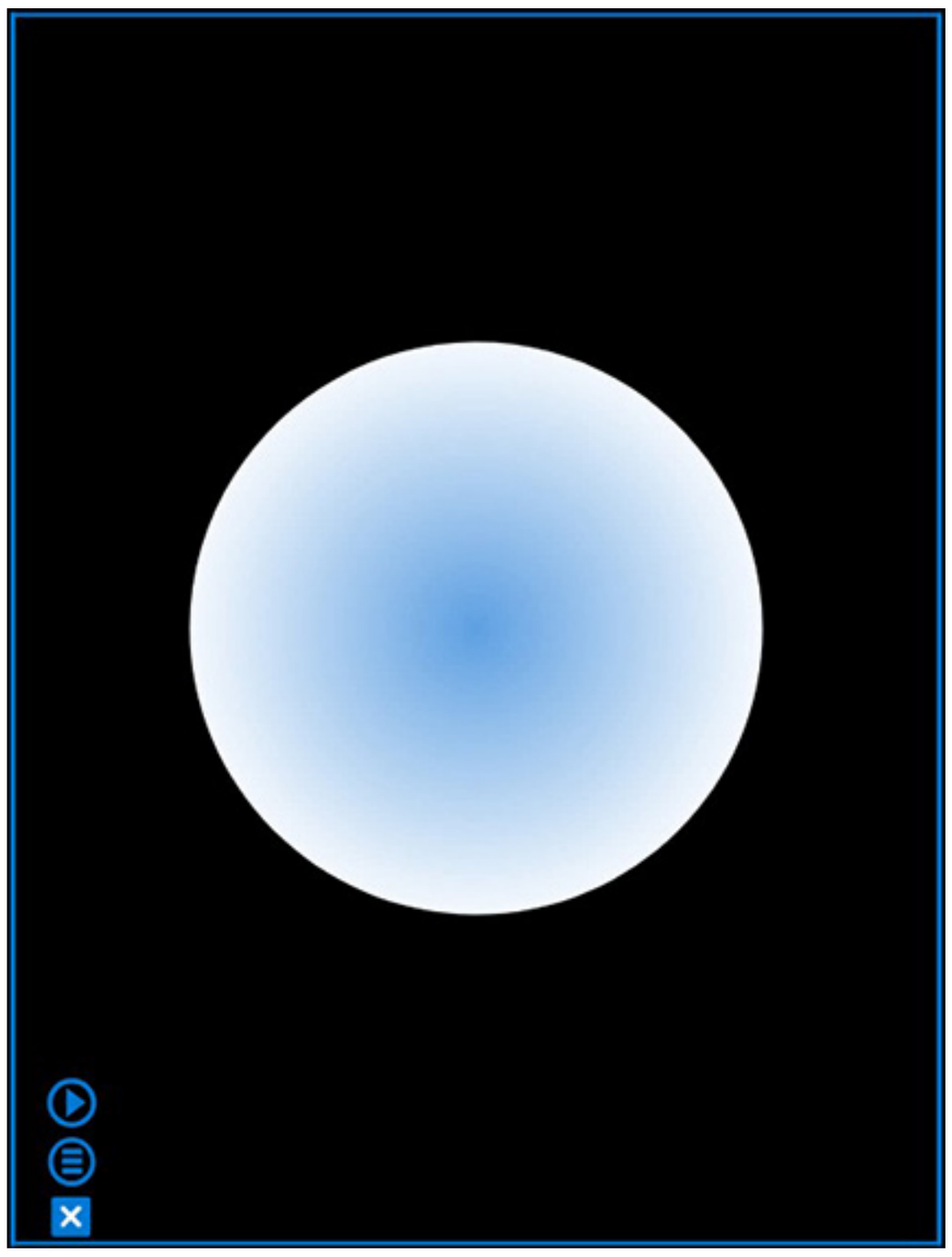
Goal: to reduce flashbacks.

Caution: For people with disorders affecting their seizure threshold, they would need to observe cautions and consult with a healthcare profession before using a bilateral sound exercise (Ellis, 2017) or a bilateral visual exercise.

Breath Pacing







Breath Pacing promotes stress reduction using a breathing strategy. It is based on Eastern yoga and meditation practices and Western relaxation training techniques.

Adults breathe an average of 12-20 beats per minute (BPM). Lowering breathing to between 6-10 BPM (one inhale and exhale cycle is counted as a breath) has benefits:

• Breathing properly has been used for centuries to reduce stress and diminish anxiety.
• Slower breathing opens narrowed blood vessels, allowing the heart to pump less strenuously causing blood pressure to go down.
• Using the exercise for 15 minutes a day, a few times a week for a few weeks strengthens willpower.
• This results in improved health and well-being.

While the anxiety-reducing effect of breath pacing, slowing breathing, goes back centuries, the physiological mechanisms are only recently coming to light. In a study using mice (Yackle et al., 2017), specific neurons have been identified connecting the brain's primary breathing rhythm generator and the brain center involved in attention, arousal and panic. Neurons in the former regulate neurons in the latter.

Pacing and lowering breathing rate is a gentle process aided by practice. A breath pacing tool, like one in this app, can be used to guide you through the process and keep track of progress (similar apps can be found online, for example, at Google and Apple's app stores). The 15 minute exercise is done a few times a week for a few weeks, meeting a suggested one-month total of 18 (green bars displayed to track progress). The app tracks progress for one or two users. The second-user feature supports a buddy system to help achieve goals. The exercise begins with your taking a reading of your current breaths per minute (BPM) to determine your starting BPM.

Instructions

A word about how to breathe for the exercise: use deep breaths that expand the abdomen (abdominal breathing), rather than short, shallow breaths that expand the chest (thoracic breathing).

Practice abdominal breathing at that rate for a minute, then lower it by one BPM for the next minute, then by another BPM, until you are practicing at 6 BPM, which continues until you have exercised a total of 15 minutes.

Preferably, inhale and exhale through the nostril. However, inhaling through the nose and exhaling by mouth is acceptable. Go slowly, avoid forcing yourself if you reach your limit and stop if light-headed.

Once you enter your BPM and start, it will take you through a 15 minute exercise, reducing your BPM automatically until you are practicing at 6 BPM.

Remember while the exercise aims for 6 BPM, benefits accrue for 6-10 BPM. So get to where you are comfortable.

Do not go below 6.

If you have health problems, check with your healthcare professional before using this exercise.

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