


## Meditation and visual stimulation protocol template

**Teresa Campillo-Ferrer**<sup>a</sup>  (tecferrer@gmail.com)

**Adriana Alcaraz-Sánchez**<sup>b</sup>  (adriana.alcaraz.sa@gmail.com)

**Susana Gabriela Torres-Platas**<sup>c</sup>  (susana.torresplatas@northwestern.edu)

### Keywords

Altered states of consciousness · Dream yoga · Lucid dream induction · Lucid dreamless sleep · Lucid sleep · Mindfulness · Out-of-body experiences · Sleep paralysis

*This document contains supplementary material for the article “Exploring ‘lucid sleep’ and altered states of consciousness using meditation and visual stimulation”, which is part of a special issue on “Dreaming and mind wandering: Spontaneous thought across the sleep-wake cycle,” edited by Thomas Andrillon, Manuela Kirberg, and Jennifer Windt.*

## 1 Training phase I: ‘Introduction’ block

### 1.1 Instructions for the Researcher:

**[Please read the following text to the participant]:**

“I am going to start by giving you some general information. We will have a 30-minute training session during which you will learn how to meditate on bodily sensations, step by step. In the first part, you will learn a meditation technique called ‘Focused Attention Meditation,’ and then we will move on to the body meditation, called ‘Body Scan Meditation.’ We will start with focusing on the arms and then progress to the whole body.

<sup>a</sup> Ruhr University Bochum, Bochum, Germany / Donders Institute for Brain, Cognition and Behavior, Radboud University Medical Center, Nijmegen, The Netherlands.

<sup>b</sup> Institute for Advanced Studies in Humanities, University of Edinburgh, United Kingdom.

<sup>c</sup> Department of Psychology and Cognitive Neuroscience Program, Northwestern University, Evanston, IL, USA.

First, we will practice ‘Focused Attention Meditation.’ This method is commonly used by beginners and is primarily based on focusing your attention on something, in this case on your breathing, while avoiding any other thoughts that may arise in the process. The key thing to understand is that meditation is not about stopping all thoughts, but about recognizing when intrusive thoughts appear and choosing not to pay attention to them—just letting them go.

A metaphor often used by Buddhist monks is that your thoughts are like cars, and you are sitting by the side of the road, watching all these cars pass by. You just sit and watch without interacting with the cars. You don’t try to stop the cars to see what’s inside, and you don’t get into the car and drive away with it. So, it’s the same with your thoughts: as soon as a car (or thought) arrives, you become aware that it’s there, but you just let it go and don’t stop to think about it.

Sometimes, while you are focusing on your breathing, an intrusive thought will appear—perhaps that you need to buy something, or that you’ve forgotten to do something. A tip for “letting it go” is to make a mental contract with yourself: simply tell yourself that you will deal with it later or think about it later. Once you do this, you can refocus on your breathing. Other times, an intrusive thought will appear, and you may not even realize it at first. As a result, you will spend some time thinking about it until you realize that you’ve lost focus on your breathing. That’s normal, it may happen. When you notice this, simply refocus on your breathing.

For the breathing exercise, we will practice a four-step breathing technique. This involves inhaling, and then pausing for a few seconds. You can choose the length of the pause based on what feels comfortable for you. After the pause, you will exhale, and then pause again for a few seconds before starting the cycle over again.

I will first guide you through the meditation, and then I will give you 3 minutes to meditate on your own. During these 3 minutes, we will play some light cues as signals to help you stay focused on the meditation. Each time we play the cues, I will remind you to stay focused on your breathing and let go of any intrusive thoughts you might have.”

## 2 Training phase II: ‘Focused attention on breathing’ block

### 2.1 Instructions for the Researcher:

**[Please read the following text to the participant (voice should become more paused from now on)]:**

“Now, we are going to begin the training. Please lie down on your back, with your palms facing upwards or downwards—whichever feels most comfortable for you. Make sure that your legs are not touching each other, and that your arms are not touching any part of your body. And now, just relax... try not to think of this as an exercise... let go of any worries or thoughts... and focus on the present moment.

[15-second pause]

Once you feel more relaxed, we will begin the ‘4-step breathing’ technique. Now, follow my instructions: first, breathe in... [5-second pause] now, hold for a few seconds... then breathe out... [5-second pause] and hold again... and now, you can begin the cycle again.

You will have 3 minutes to practice this, so try not to fall asleep. While practicing, focus only on your breathing, and remember to let go of any intrusive thoughts that may arise. We will play some light cues during these 3 minutes to help you stay focused. After each cue, I will remind you to stay focused on your breathing and return to the meditation. You only need to follow my instructions. Now, you can begin meditating.”

**[Now set a 3-minute timer for the participant and follow these instructions]:**

- Apply a light cue at the 1-minute and 2-minute marks.
- After each cue, give the following verbal prompt:

“As you notice the cue, you become lucid. Bring your attention to your thoughts, notice how your mind has wandered... Now observe your body, sensations, and feelings... observe your breathing... and remain critically aware, lucid... And now... continue with the meditation.”

### 3 Training phase III: ‘Scan of arms’ block

#### 3.1 Instructions for the Researcher:

**[Please read the following text to the participant]:**

“We will now begin the next part of the exercise, which is the body scan, but we’ll focus only on the arms for this session. For this exercise, you need to remain in the same position as before, but try not to move during the meditation. If necessary, you can move, but the ideal situation is to remain still. So, please lie down again on your back, ensuring that your arms are not touching your body, and your legs are not touching each other. Again, place the palms of your hands facing upwards or downwards, whatever feels most comfortable for you.

[5-second pause]

Now, I want you to relax again... try not to think of this as an exercise... let go of any worries and thoughts... and focus on the present moment... [10-second pause] Once you feel more relaxed, I want you to focus your attention on your hands... try to feel the tip of your fingers... and progressively the whole hand... [10-sec pause] and from this place, try to reflect about which sensations make you feel that these are your hands and not the hands of another person... and which sensations make you feel that these are indeed your hands... and not another part of your body. You don’t have to answer; just give yourself a moment to reflect about this and feel the sensations... while you focus on your hands... and especially on your fingertips. I will give you a brief moment for that.

[25-second pause]

Now that you’re more in contact with your hands, you may begin the 4-step breathing exercise again. I will give you more details about what to focus on in each breathing cycle. You don’t need to follow these instructions immediately, just begin implementing them in the next breathing cycle or whenever you feel comfortable. If I need you to do something in real-time, I will say “follow my instructions”. So, for your next breath, focus on how the air enters through your nose and moves to your lungs... feel how your body moves with the breath... and notice the sensation as your chest rises... [5-second pause] Then, when you hold your breath after inhaling, keep your focus on your lungs while holding the air... and then breathe out... [10-second pause] Now, try to follow this approach in the same breathing cycle. Follow my instructions: first, breathe in while feeling the air travel from your nose to your lungs... hold your breath, focusing only on the lungs... then breathe out... [4-second pause] and stop again for a few seconds.

You will continue breathing this way but now, with every exhalation, you will scan different sensations in your arms. With every exhalation, you will shift your focus from region to region, reflecting on which sensations make you feel that a specific part of your arm is yours and not someone else’s, and which sensations make you feel that this is a specific part of your body and not another one. Then, you will breathe in, focusing your attention from the nose to the lungs... [2-second pause] you will hold your breath and focus on the lungs... [2-second pause] and

now, the first time you exhale, shift your attention to your shoulders: What makes you feel these are your shoulders?

[25-second pause]

The second exhale, shift your focus to your upper arms...

[15-second pause]

Now, focus on your elbows...

[15-second pause]

Next, your forearms...

[15-second pause]

Then your wrists...

[15-second pause]

Now, your hands...

[15-second pause]

Then the palms of your hands...

[15-second pause]

Finally, your fingers and fingertips...

[20-second pause]

Now, we will extend this exercise to the whole arm. Follow my instructions carefully: First, breathe in while focusing your attention from the nose to the lungs... [2-second pause] now, hold your breath and focus on the lungs... [2-second pause] next, breathe out while shifting your attention gradually from your lungs to the fingertips of your hands... and stop, focusing only on your fingertips. Repeat this cycle for the next few minutes, but this time, let it flow more smoothly. As you breathe out, shift your focus from the lungs to your fingertips. Try to feel the different parts progressively without reflecting on them individually, and allow yourself to relax these parts at the same time. With each breath cycle, you will feel more and more relaxed, and more and more connected with your fingertips, your hands, and your arms.

You can now meditate on your own. Try not to fall asleep, and remember to let go of any intrusive thoughts, as you did before. Forget about where you are and that this is an exercise—just focus on your breathing and sensations. We will play some light cues like before to help you stay focused during this time. You can begin meditating now.”

**[Now set a 3-minute timer for the participant and follow these instructions]:**

- Apply a light cue at the 1-minute and 2-minute marks.
- After each cue, give the following verbal prompt:

“As you notice the cue, you become lucid. Bring your attention to your thoughts, notice how your mind has wandered... Now observe your body, sensations, and feelings... observe your breathing... and remain critically aware, lucid... And now... continue with the meditation.”

## 4 Training phase IV: ‘Scan of whole body’ block

### 4.1 Instructions for the Researcher:

**[Please read the following text to the participant]:**

“We can now continue with the next exercise. We will first do a body scan of the arms for a moment (as you did before), and then you will incorporate your legs and the trunk of your body. So, lie down again on your back, making sure your arms are not touching your body... and your legs are not touching each other... and once again, place the palms of your hands facing upwards or downwards, whichever feels most comfortable for you...

[3-sec pause]

Now, I will ask you to relax again... try not to think of this as an exercise... let go of any worries or thoughts... and simply focus on the present moment. [8-sec pause] Next, you will do the same exercise with your arms again. Follow my instructions: First, breathe in while focusing your attention from the nose to the lungs... [2-sec pause] now, hold your breath and focus on the lungs... [2-sec pause] Then, breathe out while gradually shifting your attention from the lungs to the fingertips of your hands... and now stop and focus only on the fingertips. I will give you a brief moment to reconnect with your arms, and then we will continue...

[30-sec pause]

Now, from this place, I want you to contact with your legs and the trunk of your body, but without losing contact with your arms. So, breathe in again and try to feel how the air enters through your nose... travels to your lungs... and how your body moves with it... then, hold your breath for a couple of seconds while focusing only on your lungs... and from there, instead of focusing only on your arms, you will also include your trunk and legs. [2-sec pause] Then, each time you exhale, move your attention through your arms, up to the fingertips of your hands (just as you did before), but at the same time, include your chest... belly... back... and legs, extending the focus all the way down to the tips of your toes. After each exhale, stop and focus only on the fingertips of both your hands and feet.

Now, let’s try to do this in real time. Follow my instructions: first, breathe in while focusing your attention from the nose to the lungs... [2-sec pause] now, hold your breath and focus on the lungs... [2-sec pause] then, breathe out, moving from the lungs to the arms, trunk, and legs, all the way to the fingertips of both your hands and feet... and now stop and focus only on the fingertips of your hands and feet. Continue doing this, and try to relax these parts as you feel them. With each cycle, you’ll feel more and more in contact with your legs, your arms, and your whole body... and you will also feel more and more relaxed. I will give you a few minutes to continue doing this while we play some light cues to help you stay focused. Try not to fall asleep during this process, and then we will continue with the exercise...”

**[Now set a 3-minute timer for the participant and follow these instructions]:**

- Apply a light cue at the 1-minute and 2-minute marks.
- After each cue, give the following verbal prompt:

“As you notice the cue, you become lucid. Bring your attention to your thoughts, notice how your mind has wandered... Now observe your body, sensations, and feelings... observe your breathing... and remain critically aware, lucid... And now... continue with the meditation.”



## 5 Falling asleep phase: Final instructions

### 5.1 Instructions for the Researcher:

**[Please read the following text to the participant]:**

“Now, you can fall asleep, and I want you to try falling asleep while remaining lucid. To do this, continue the meditation in the same position you’re in right now, trying not to move at all as you fall asleep. The meditation you should follow is the last one you practiced—the one that focused on your arms, the trunk, and legs simultaneously.

Keep in mind that the goal is to let your body fall asleep while your mind is still awake. As you do this, you may notice your body progressively relaxing and falling asleep while your mind remains alert. It is normal to feel less sleepy during this process—this is a sign that your mind is achieving lucidity. Remember that you might also start to see, hear, or feel things that aren’t real. These experiences are part of the natural process of falling asleep. If this happens, shift your focus away from the meditation and instead try to amplify the image, sound, or sensation until it transforms into a lucid dream. However, if you feel uncomfortable with any of these sensations, sounds or images, don’t try to amplify them. In that case, please stop the meditation entirely and let yourself fall asleep normally.

It’s perfectly fine if you lose lucidity during the process and later regain it—or even if you don’t regain it at all. To support you, we will play light cues, as we did earlier. You won’t receive additional instructions during the cues this time, but each time you see one, you should use it as a reminder to regain focus on your meditation and maintain lucidity until you fall asleep. If you experience a lucid dream, remember to perform the left-right-left-right eye signal. Do you have any questions?

[5-sec pause]

Then you may now fall asleep. Thank you for your time and effort during the meditation.”

**[Now set a 14-minute timer for the participant and follow these instructions]:**

- Apply a light cue at the following time points: 1, 2, 3, 4, 5, 6, 8, 10 and 14 minutes.

### Open Access

This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.