

LIGHTPULSE

Breathing through light

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LightPulse is a dynamic light experience that promotes a state of relaxation, calmness and transcending using the alternation of light stimuli in the perceptual vision of the user. The changes between a focal point of glow and the filling of the area of vision creating an ambient luminescence aims to attract and relax the user perception.

FOCUS GROUP

The focus area that the experience aims is in waiting rooms in cancer care facilities, specifically for testing results. This is a personal choice related to interviews carried out to understand the experience in these spaces, how they can be hostile and forget the emotional state of the users, in this case patients, family and staff in the area.

PROBLEM

The problem that this experience aims to address is how can an art/light experience can create a relaxing, calming and transcending experience in a space without being invasive in an specific group that has to cope with high levels of anxiety in stress.

According to the national cancer institute in the United States (cancer.gov, 2022), and the cancer research center in the United Kingdom (cancerresearchuk.org, 2022), relaxation and imagery exercises help to cope with pain and stress situations.

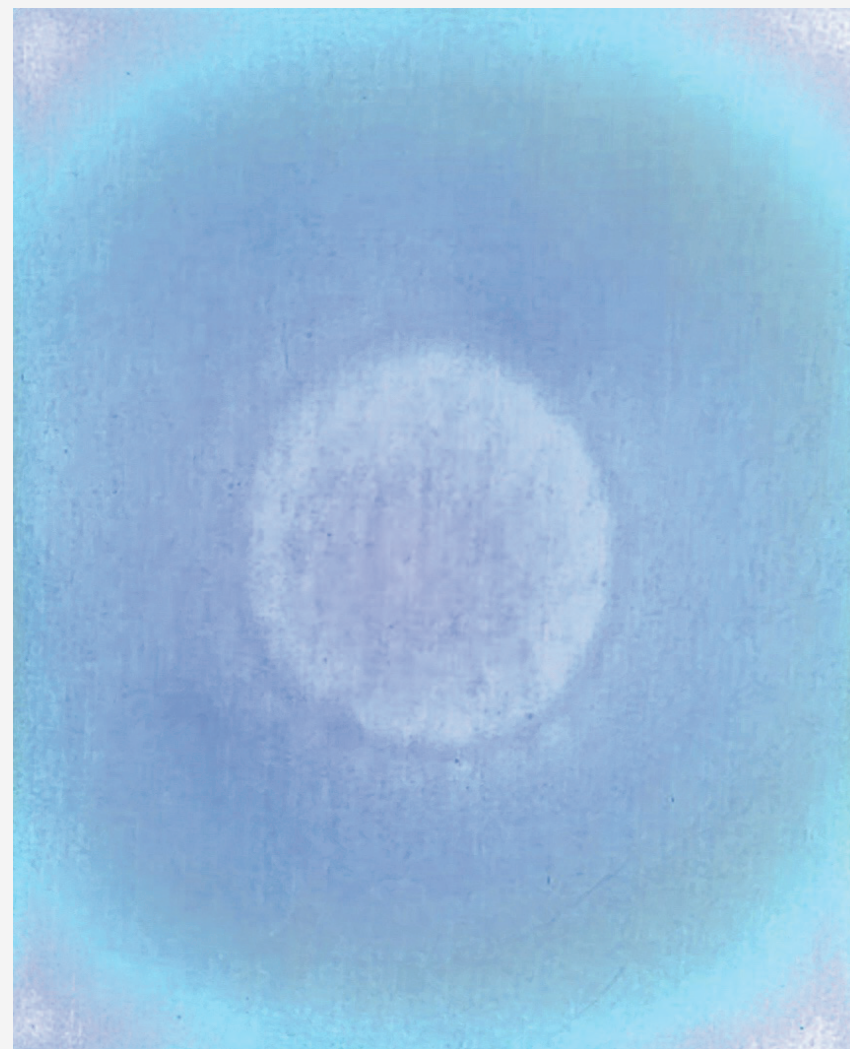


Fig 1. Light piece with the projection at the start of the sequence.

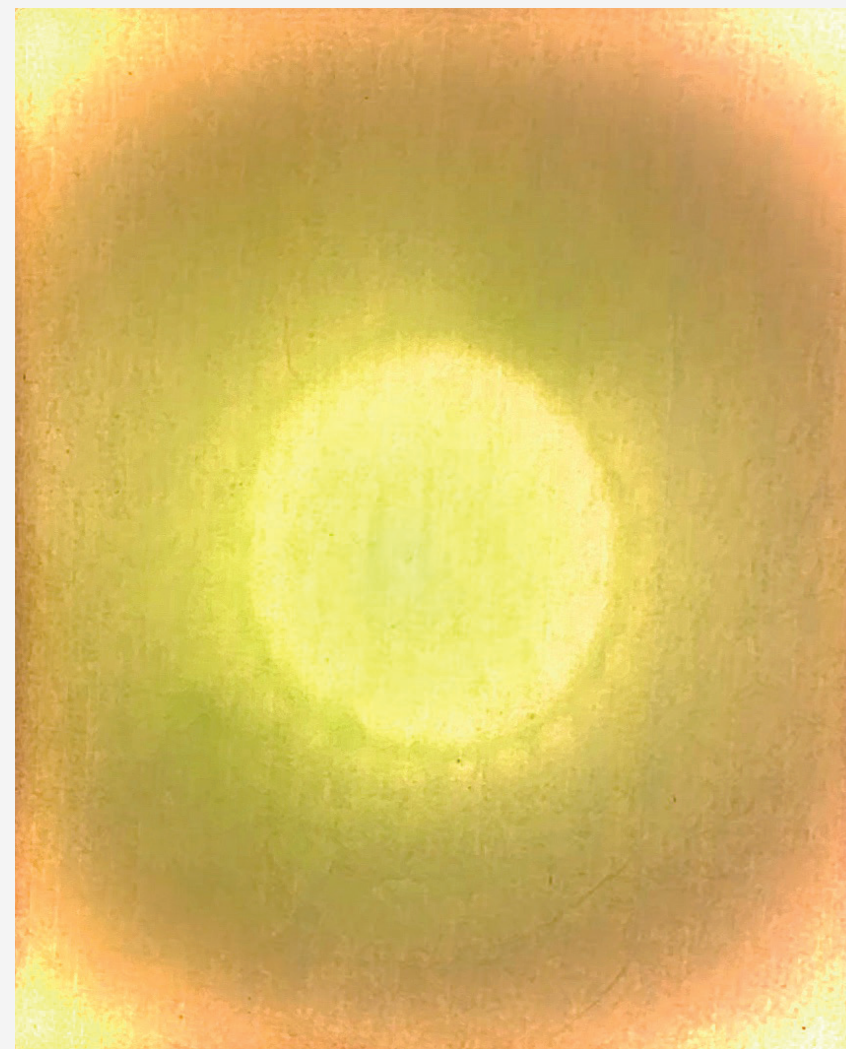


Fig 2. Light piece with the projection at the middle of the sequence.

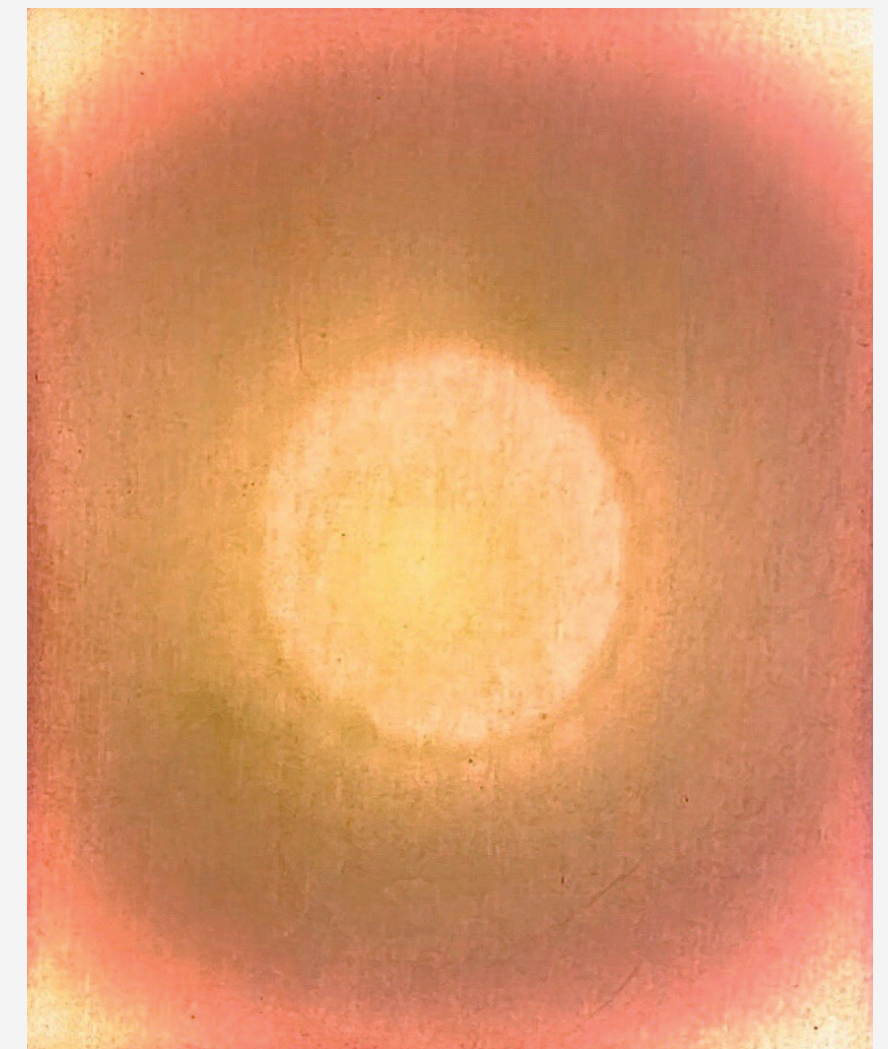
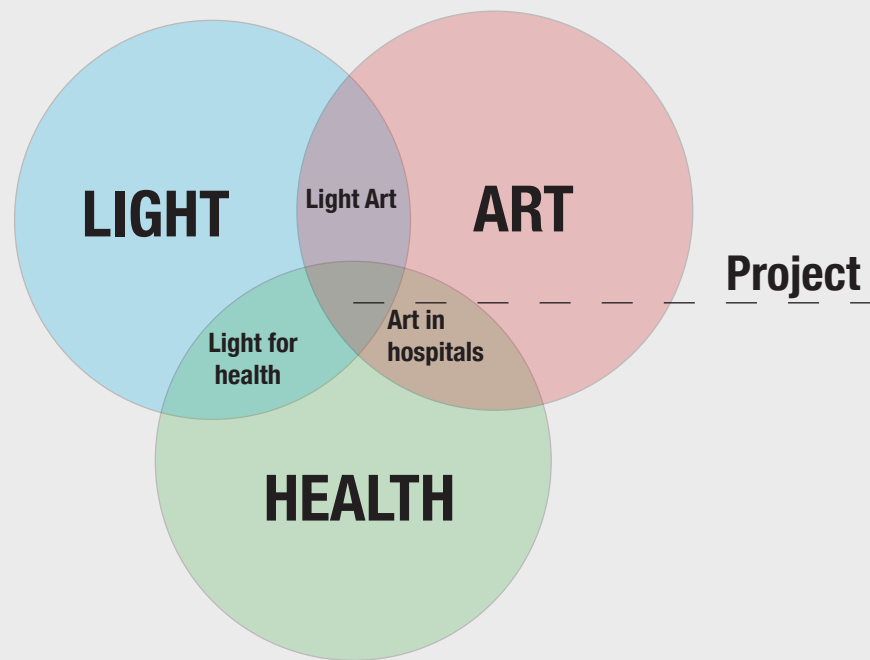


Fig 3. Light piece with the projection at the end of the sequence.

RESEARCH



The information gathered in this section was focused on the intersections between the terms light, art, and health. The aim was to find the theoretical basis for creating an artistic piece of lighting that responds in some way to the well-being needs of users based on existing research, experiments, and results.

ART IN HOSPITALS

Art has been present in hospitals for several centuries hand in hand with religion, as a display of power and wealth, a space for prayer, or the need to find a space for introspection. (Rollins, 2021) The use of art in hospitals today is recognized in several countries such as the United States with the “percent for art” program where there is 1% of the total construction budget for works of art, and in Sweden, where it reaches 2% through the one percent rule program.

Curiosity is an essential element to be analyzed and taken into account in art, it is defined as the “disposition to inquire, investigate, or seek after knowledge, or, quite simply, a state of mind in which an individual wants to learn more about something.” (Binson, 2009). The body rewards the process of behavioral exploration through discovery, generation psycho-physiological process of rewarding the body through the brain. (Berlyne, 1960).

Art for soothing and comforting

“Of all the intentions of hospital art, artwork created or selected to sooth and comfort is the most common. This occurrence is likely the result of a large and solid body of evidence based on several well-regarded theories.”

(Rollins, 2021)

The role that nature plays as a component of tranquility that relates patients with the mental construction of familiar scenes is proven as an effective means to generate a state of relaxation and calm, reducing stress levels in health care facilities. More recent concepts such as biophilia, which integrate the perception of nature and its effects through artificial forms and patterns to activate the genetic memory of the human being, can be effective in creating emotions that lead to tranquility and calm.

Art for transcending

“Art for Transcendence has the ability to free the brain from the dominance of reality.”

(Rollins, 2021)

Transcendence is the quality of being able to go beyond normal limits or boundaries (Collins Dictionary, n.d). Transcendence is related to human introspection; meditation, prayer, music, and dance are some of the ways that human beings have developed and use to reach this state. As for the art in hospitals, it has been shown that abstract art promotes transcendence and its use is being typified by zones and areas within the care facilities. Public areas, waiting areas, and the areas that are accessed by the users in hospitals show challenging and abstract art avoiding the use of it in patient rooms where the stress levels could rise. (Rollins, 2021)

LIGHT FOR HEALTH

Light has an influence on the human being through visual perception, our eyes are devices that capture radiant energy in the form of electromagnetic waves, the brain processes this information through the receptor cones and generate physiological and chemical reactions that psychologically modify behavior. The creation of subjective impressions of the individual is also obtained through the modulation or alteration of the typology of light stimuli, as a consequence psycho-physiological reaction are produced within the body through vision. (Flynn et al., 1979; Boyce, 2003)

The intensity level of the light used in public spaces and waiting rooms is low level and warm colors are used to induce states of relaxation in users, in addition to generating an atmosphere of safety and hospitality. (Tomassoni et al. 2015). These spaces are configured through architecture as scenarios where light accompanies and materializes the emotions of its users, the manipulation and alteration of this is directly related to the emotional changes of the user within the function that is performed.

LIGHT ART

Light was compared to art in the form of a painting by Richard Kelly, the godfather of lighting design. He divided the different layers of the painting into the layers of the experienced light being the (1) focal glow the highlights, (2) the ambient luminescence as the grade washes, and (3) the play of brilliants as the sharp details. Each of these layers and elements has characteristics in the human psycho-physiological, focal glow draws the attention of the viewer by attracting the human vision, while the ambient luminescence relaxes and calms the user with the uniformity and limitless sensation of the space, and the play of brilliants excites the optic nerves to create dynamism and entertainment for the spectator. (Kelly, 1952)

The majority of the Light Art movement, took into consideration these elements to create pieces that changed the perception of the user regarding the environment that was inhabited.

“In the Light Art artworks, as well as Light Design in general, light and lighting take up the function to illuminate the environmental (which is perceptual and experiential space), highlighting and marking objects, revealing spatial or symbolic paths, focus or divert the viewer’s attention in front of a specific artwork’s detail, letting out the symbolic strategy and meaning trajectories planned by the artist or light designer. “

(Tomassoni, 2015)

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- Berlyne, D. (1960). Conflict, arousal and curiosity. New York, NY: McGraw-Hill.
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 Tomassoni, R., Galetta, G., & Treglia, E. (2015). Psychology of Light: How Light Influences the Health and Psyche. Psychology, 6, 1216-1222. <http://dx.doi.org/10.4236/psych.2015.610119>
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CONCEPT

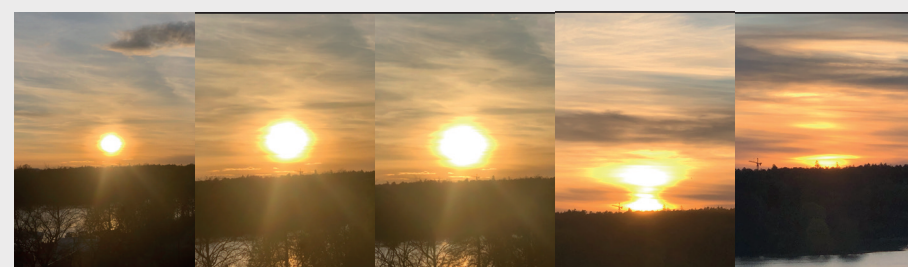
LightPulse was conceived as the integration of dynamic light and breathing techniques, it is also an analogy of light in the form of a pulse behaving rhythmically to the cadence of the lungs. Its name is the combination of the light that is part of the piece the dynamism and the pulse that measures the agitation of the heart and has a double meaning with the short duration waves of light.

BREATHING

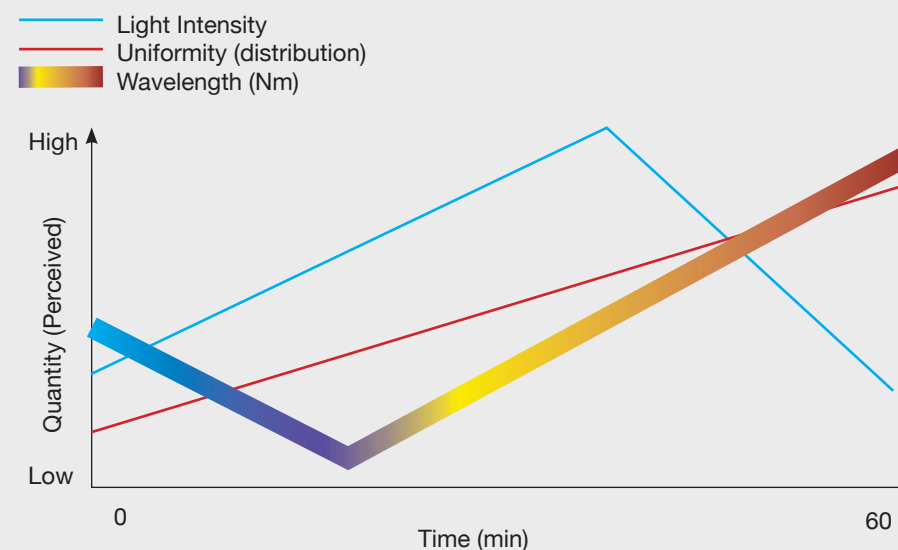
Breathing and visualization techniques are recommended to practice at any moment possible, regarding this, research has shown that during slow breathing techniques (at near 6 breathes/min) psychological/behavioral outcomes of decreased anxiety (Gruzelier et al., 2014), side effects of relaxation (Lehrer et al., 2003), increased ease and comfort (Edmonds et al., 2009), relaxation (Lin et al., 2014), positive energy and pleasantness (Van Diest et al., 2014) and somatic-based emotional control strategies (Gross et al., 2016), can be achieved.

DYNAMISM

Under the precepts of the different layers of light explained by Richard Kelly at sunset, I observed how the intensity, uniformity, and color changed in the light creating a dynamic moment that could be used as a reference to generate calmness and relaxation. The perception of light varying between focal glow and ambient luminescence as time goes by was the inspiration for the piece.

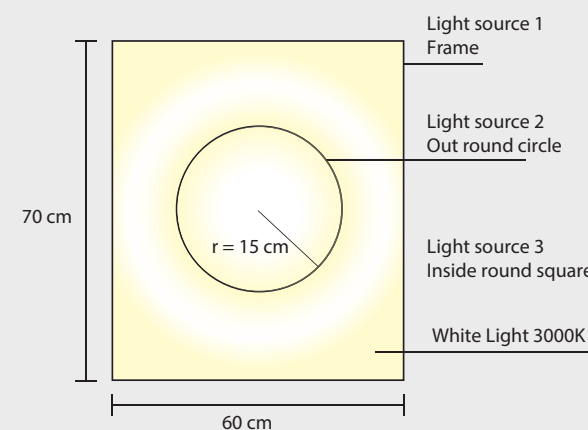


TIME
0 min 15 min 30 min 45 min 60 min

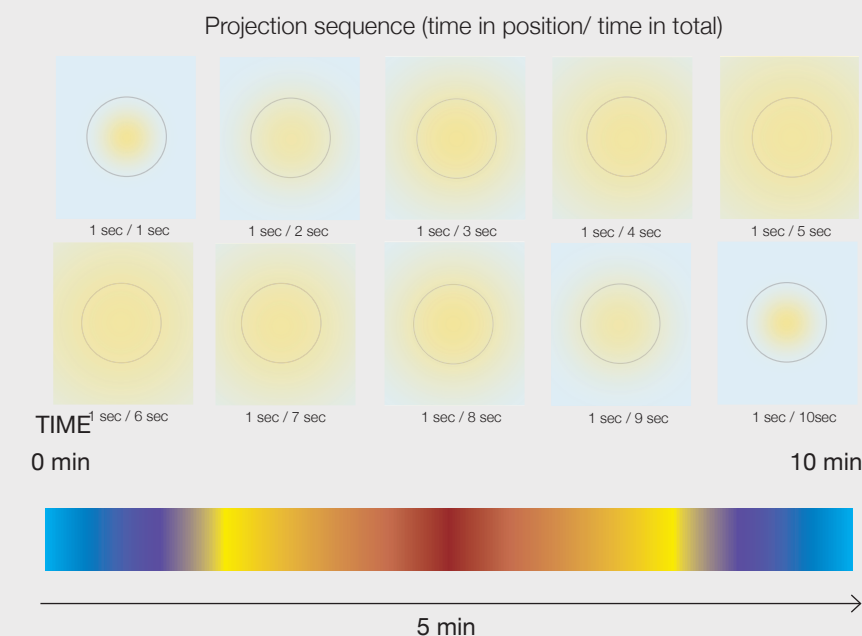


The LightPulse experience was built from two elements:

- 1- The creation of a light piece where a non-dynamic light source hanging on a wall as a painting.
- 2- A dynamic video projected in the non-dynamic light source.



2. A dynamic video projected in the non dynamic light source.



Full projection video (10min) <https://vimeo.com/714555872>

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Lehrer, P. M., and Gevirtz, R. (2014). Heart rate variability biofeedback: how and why does it work? *Front. Psychol.* 5:756. doi: 10.3389/fpsyg.2014.00756

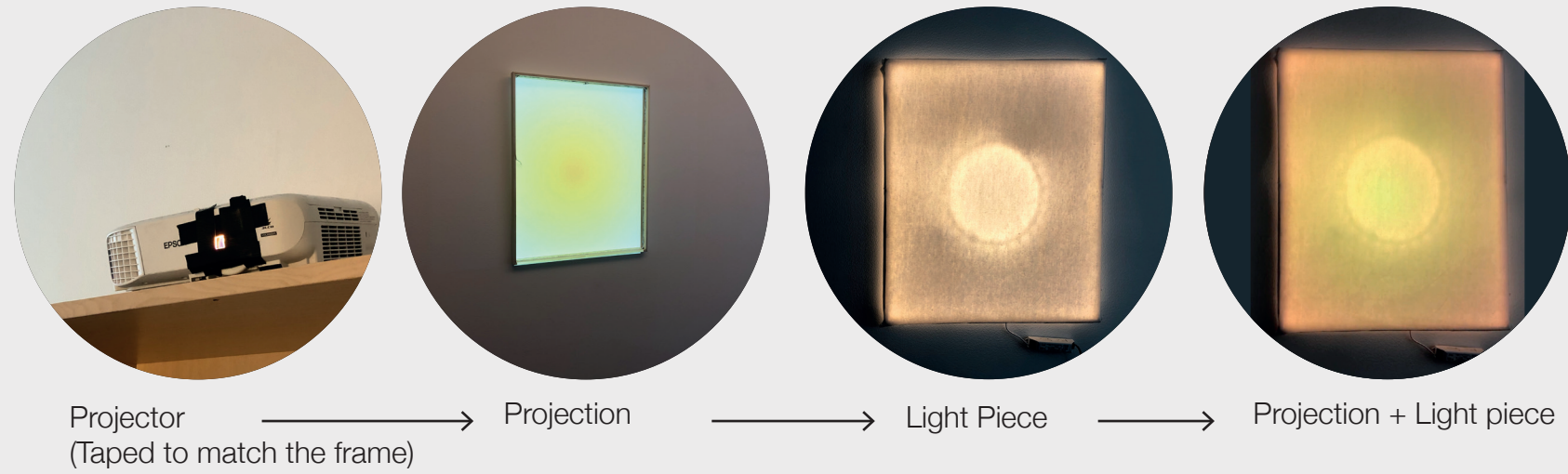
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Zaccaro A, Piarulli A, Laurino M, Garbella E, Menicucci D, Neri B and Gemignani A (2018) How Breath-Control Can Change Your Life: A Systematic Review on Psycho-Physiological Correlates of Slow Breathing. *Front. Hum. Neurosci.* 12:353. doi: 10.3389/fnhum.2018.00353

EXPERIENCE SETUP

PROCEDURE

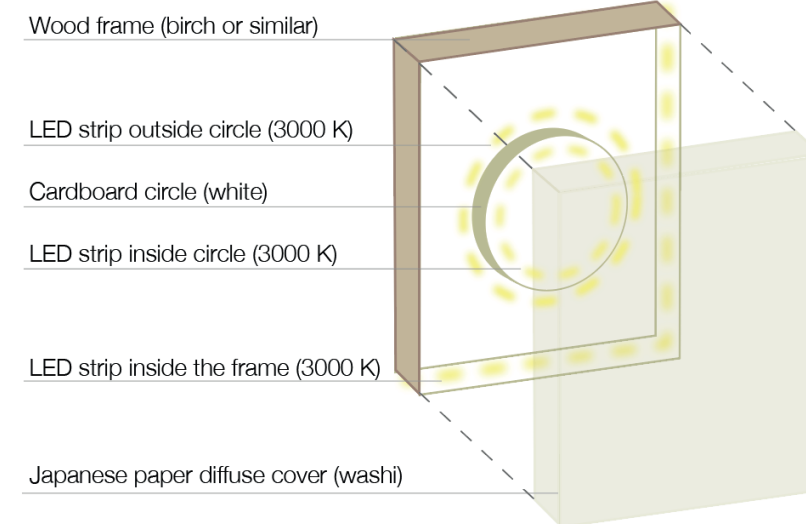
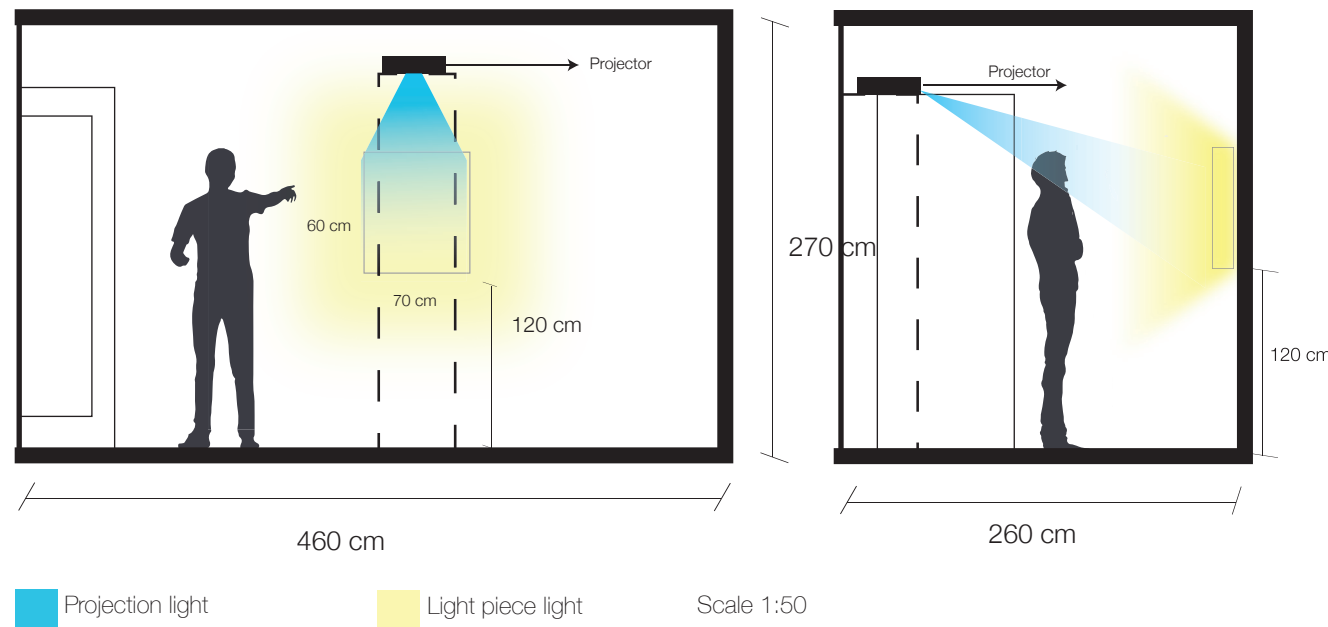


EXPERIENCE IN THE SPACE



PLANS

Dimension and size were designed according to the spaces for the competition. The room in the second floor with no windows was the testing space.



The budget for the piece vary between 100 to 120 USD, depending on the quality of the materials. A projector is required for the experience to work.