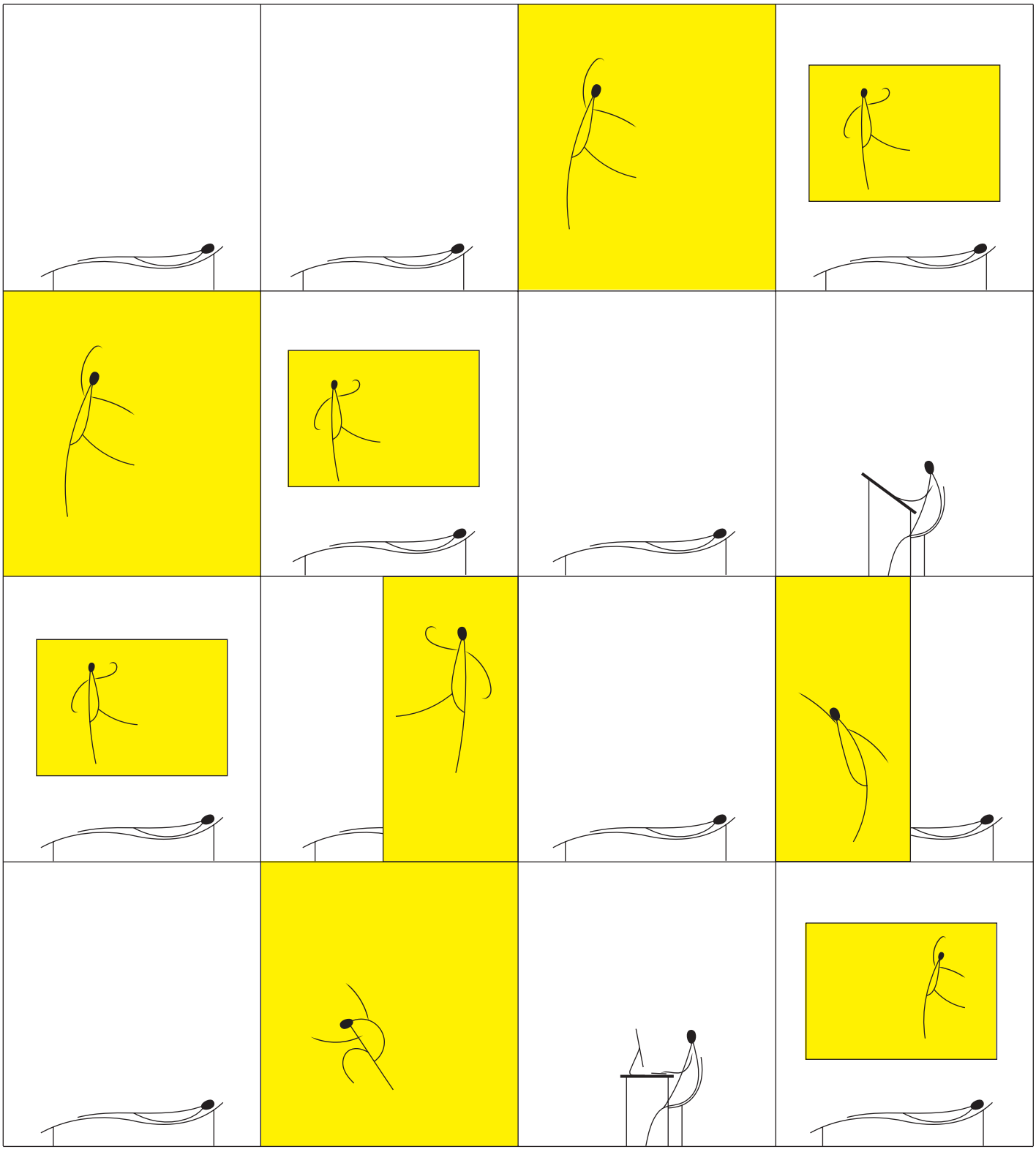
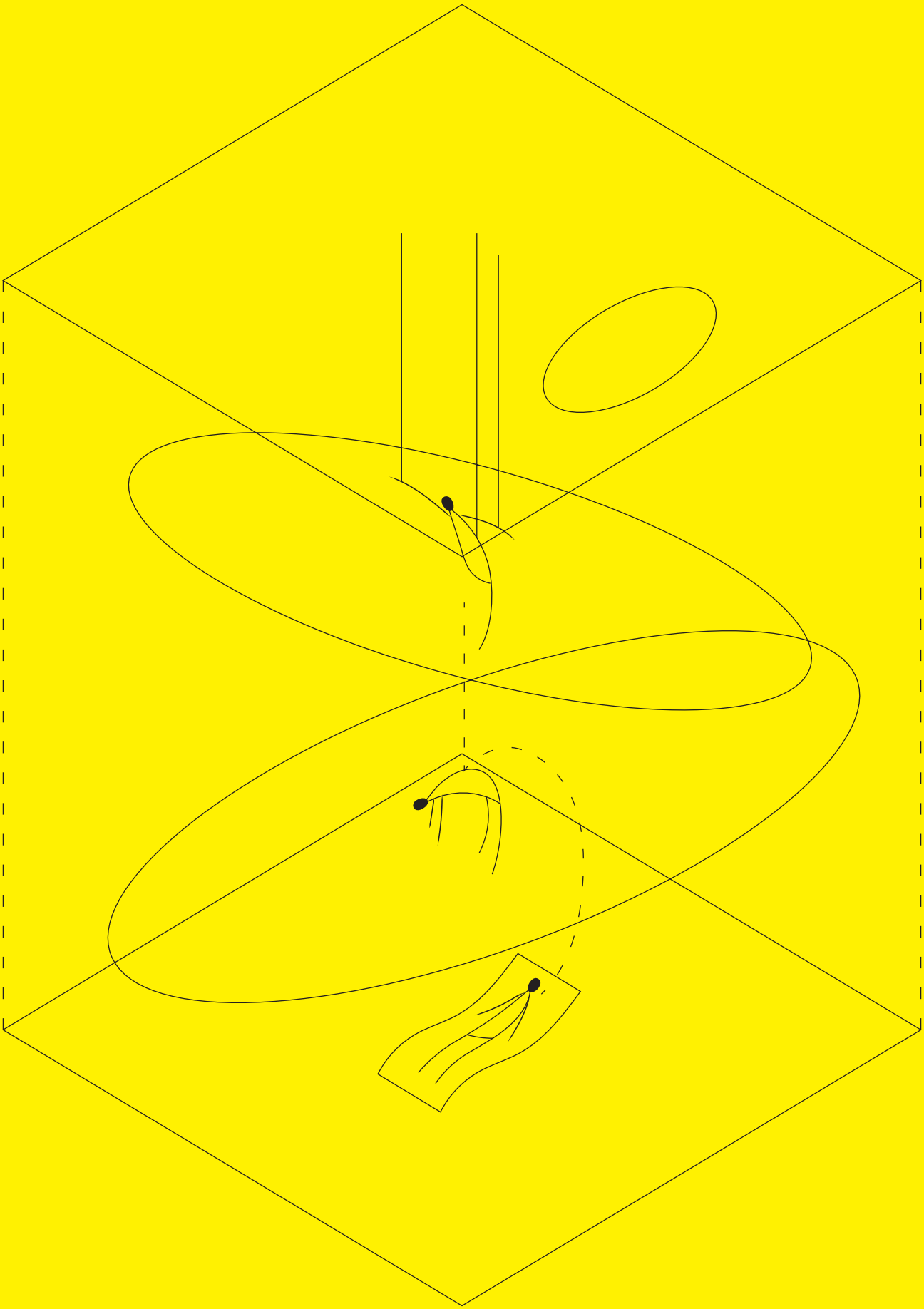
How to Dance While Dreaming



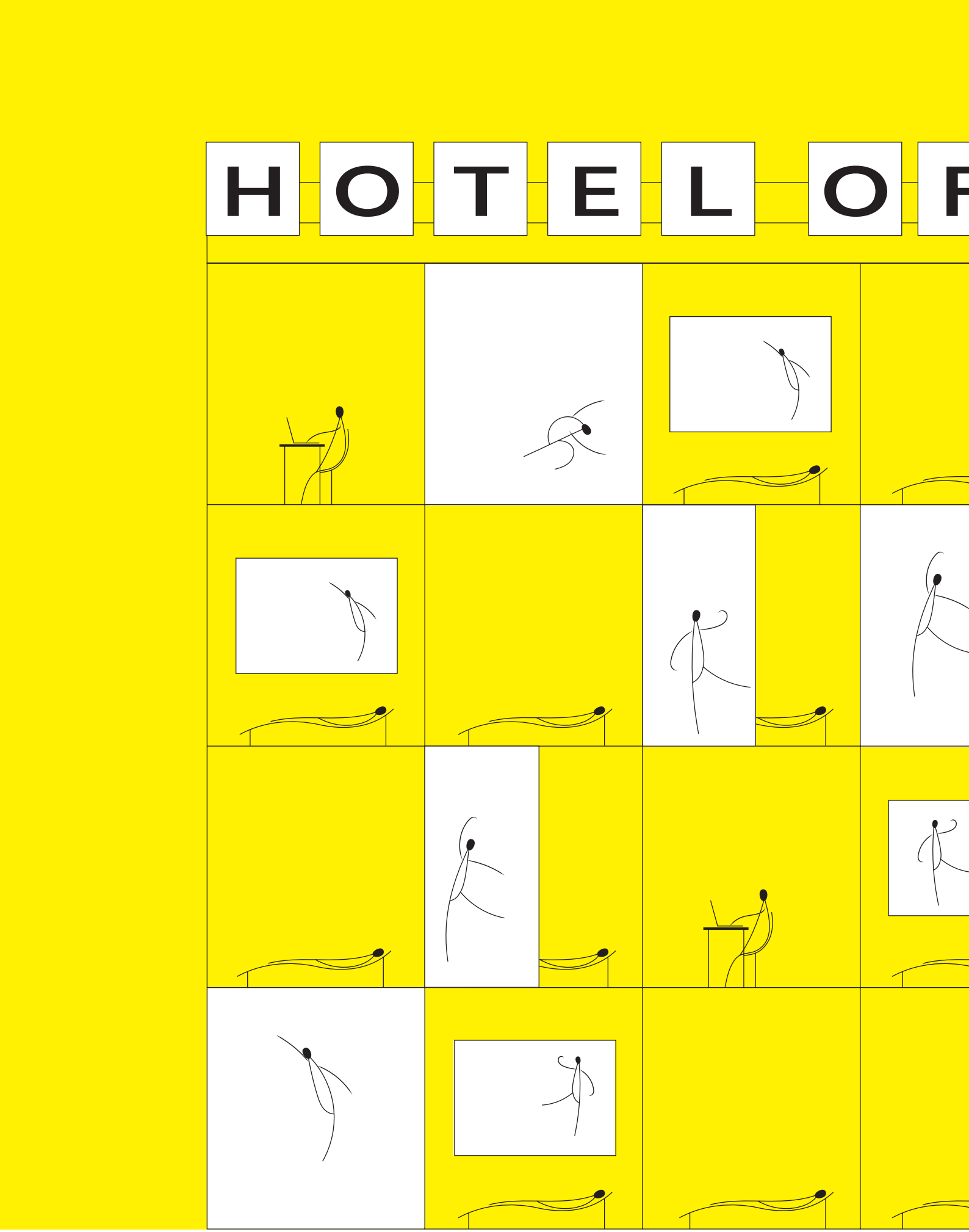
A VISITOR'S GUIDE TO THE HOTEL OF DREAMS

Welcome to the Hotel of Dreams

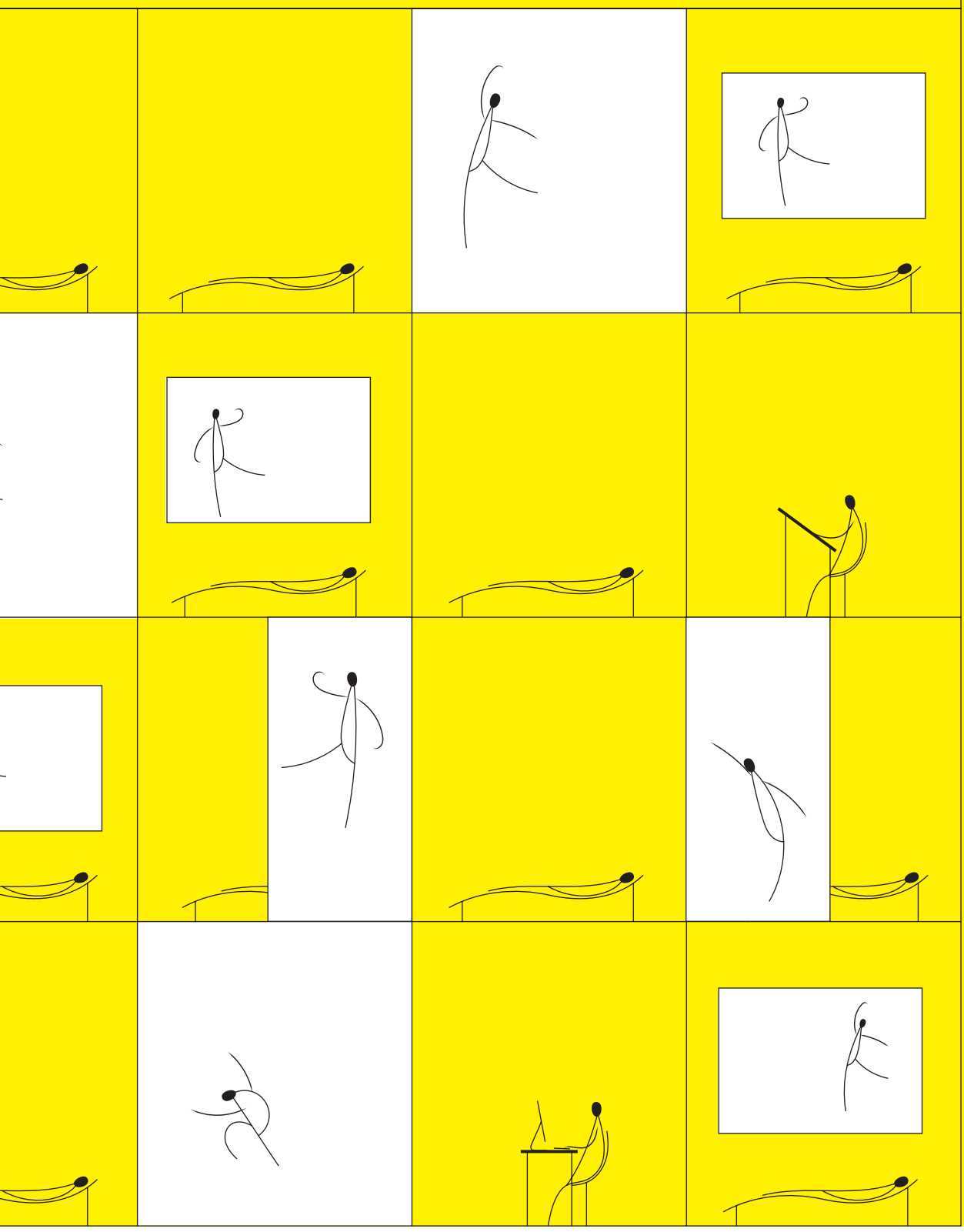


At the still point of the turning world.

Neither flesh nor fleshless;
Neither from nor towards;
At the still point, there the dance is —


HOTEL

F DREAMS



Welcome to the hotel of dreams. We devote our facilities to exploring how physicality can be connected with your dream state, while you're dreaming. If you're on a business trip, please be adviced that dancing dreams does not usually maximize the comfort of your sleep.

Your dream dancing will not be a transcription of your dream, such as making you run when you're dreaming about running. Rather, in our facility, you are extending an invitation for your dream to manifest physically, bridging a quixotic connection between the active consciousness and the dormant body.

Would
you like to
dance
while
you are
dreaming?

Sleep as a biological problem: an overview of frontiers in sleep research

Sleep is a physiological process not only for the rest of the body but also for several brain functions such as mood, memory, and consciousness. Nevertheless, the nature and functions of sleep remain largely unknown due to its extremely complicated nature and lack of optimized technology for the experiments.

Most of us spend a third of our time sleeping, but the experience of sleep is elusive to capture. We have scientific descriptions of what our bodies go through when we fall asleep, but we do not really comprehend what we are experiencing during sleep.

The Science of Sleep: Stages and Cycles

Certain brain structures and chemicals produce the states of sleeping and waking. For instance, a pacemaker-like mechanism in the brain regulates circadian rhythms. This internal clock, which gradually becomes established during the first months of life, controls the daily ups and downs of biological patterns, including body temperature, blood pressure, and the release of hormones.

How Sleep Works

Within a minute after falling asleep, notable changes start to affect both the brain and body. Body temperature drops, brain activity ramps down, and heart rate and respiration slow as well. Not surprisingly, the body's energy expenditure is lower during sleep.

It is important to recognize, though, that what happens during sleep is dynamic. Over the course of one night, you actually progress through multiple sleep cycles, each of which lasts between 70 and 120 minutes and is composed of separate sleep stages. These sleep stages are fundamental to how sleep works.

Sleep is of the Brain, by the Brain and for the Brain

For decades it was assumed that brain activity was greatly reduced or absent during sleep. Subjective experience of the loss of consciousness and the lack of memory of mental activity during sleep appeared to support this conclusion.

This assumption was overturned when the regular cyclic alteration of rapid eye movement (REM) and non-REM (NREM) sleep phases was discovered in the 1950s and 60s. The discovery of REM sleep and its correlation with vivid hallucinatory dreaming was evidence that the brain was highly active during sleep. Soon after this discovery it was noticed that sensory inputs and motor outputs were simultaneously blocked when the brain was activated during REM sleep, putting it 'off-line'.

It was a great surprise to discover that the vigorous brain activation of REM sleep occurred at regular 90-minute intervals and occupied up to 20% of sleep. This fact alone invalidated the belief that sleep was caused by and associated with a cessation of brain activity.

Imagine if our experience of dining only consists of hunger, fullness, and knowledge about the biological process that happens when we eat - yet no coherent memory of what we experienced when we dined. Only fleeting hints of aroma, but no idea of the menu nor the composition of each course, let alone the tastes that should have left an impression wen we dined. Such is our relationship with sleep.

Stages of Sleep

Sleep can be divided into two different general phases: REM sleep and non-REM (NREM) sleep. Rapid eye movement (REM) sleep is characterized by darting movements of the eyes under closed eyelids. Brain waves during REM sleep appear very similar to brain waves during wakefulness. In contrast, non-REM (NREM) sleep is subdivided into four stages distinguished from each other and from wakefulness by characteristic patterns of brain waves. The first four stages of sleep are NREM sleep, while the fifth and final stage of sleep is REM sleep.

When we wake up, we earnestly try to grasp snippets of memory from our dreams. But our dreaming state is so inaccessible to our conscious mind: our body has made sure that dreaming is an internal state that cannot communicate anything to the external world.

Stages of Sleep

NREM Stage 1: Stage 1 sleep is a transitional phase that occurs between wakefulness and sleep, the period during which we drift off to sleep. During this time, there is a slowdown in both the rates of respiration and heartbeat. In addition, stage 1 sleep involves a marked decrease in both overall muscle tension and core body temperature. It is relatively easy to wake someone from stage 1 sleep.

NREM Stage 2: the body goes into a state of deep relaxation. Brain wave activity slows, but is marked by brief bursts of electrical activity.

NREM Stage 3 + 4: Often referred to as deep sleep or slow-wave sleep, these stages are characterized by low frequency (up to 4 Hz), high amplitude delta waves. During this time, an individual's heart rate and respiration slow dramatically. It is much more difficult to awaken someone from sleep during stage 3 and stage 4 than during earlier stages.

Stages of Sleep

REM: REM sleep is marked by rapid movements of the eyes. The brain waves associated with this stage of sleep are very similar to those observed when a person is awake, and this is the period of sleep in which dreaming occurs. It is also associated with paralysis of muscle systems in the body with the exception of those that make circulation and respiration possible. Therefore, no movement of voluntary muscles occurs during REM sleep in a normal individual; REM sleep is often referred to as paradoxical sleep because of this combination of high brain activity and lack of muscle tone.

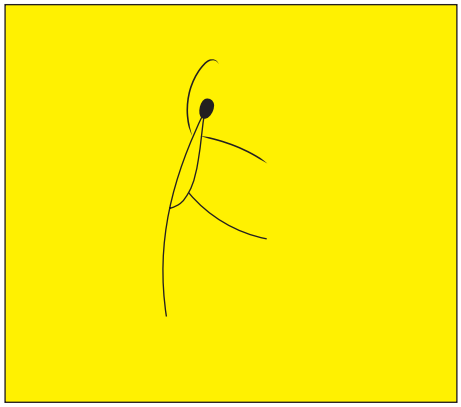
While our brain is actively dreaming, our body is paralized like a casket. Nerve pathways in the brain prevent our muscles from moving, to protect us from acting out on the intense content of our dreams. Every dream is destined to be trapped in our stationary body. Never are our mind and physical experience more separated than when we are dreaming.

But what if the internal process of dreaming can ripple into the physical world of sensations? Dream state is the only time during sleep when our brain is almost as active as when we are awake. Can we find a way to bridge the activity of dreaming with physical expressions?

How do
we make it
possible
for you
to dance
while you
dream?

At the Hotel of Dreams, we support three approaches to create movement movement through your dreams: **The Acrobat**, **The Doppelganger**, and **The Psychic**.

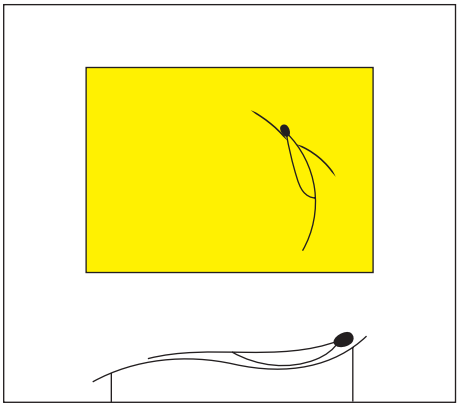
All three approaches utilize a EEG headset to monitor your brain wave as you fall asleep. When you start dreaming, your brain wave data will be transformed into choreography in different ways.



THE ACROBAT

Dance in the air when you're dreaming

How many people does this experience require?	1 person
How does this experience affect my quality of sleep?	You will be naturally awakened from your dream, mid-dancing
Is there anything I should be aware of, before I partcipate?	Use Caution (See p18)
How physically interactive is this experience?	You will be dancing while you dream



THE DOPPELGANGER

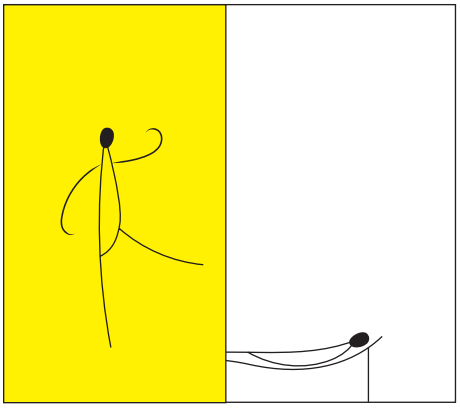
Create an avatar that dances to your dream

1 person

You are able to sleep through the night

Suitable for all

Your digital avatar will be dancing as you dream



THE PSYCHIC

Your partner dances to your dream, or vice versa

2 persons

One of you (the dancer) will not be sleeping for two hours

Use Caution (See p29)

Your partner will be dancing to your dream

The Acrobat

CAUTION: Not suitable for people with any implanted electronic device, children under 6 and pregnant women.

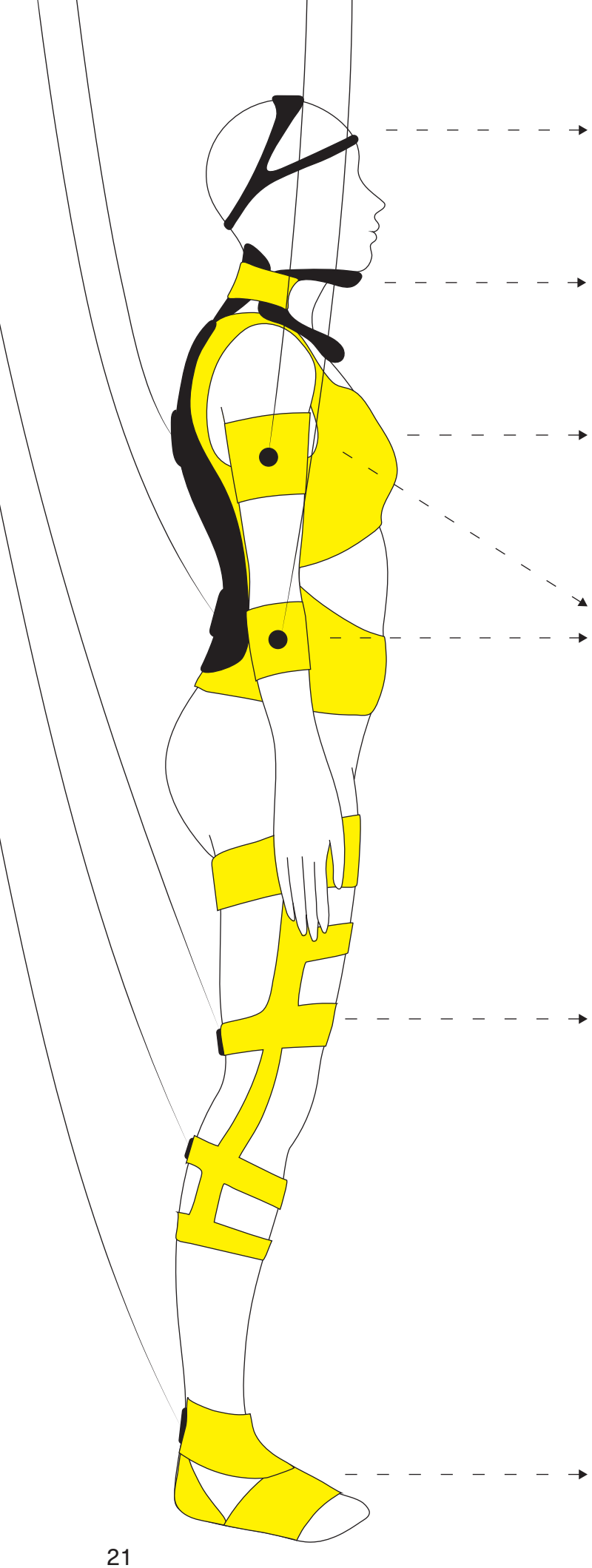
This is the only experience we provide that directly mobilizes your body when you dream. Your dream is invited to possess and dance through your dormant body.

You will fall asleep wearing an EEG headset, in an electro-stimulation suit attached to a rig system. The suit sends mild electrical currents to your muscles, to mimic the action of signals coming from your neurons, making your muscles contract when your brain cannot command them to do so. We recommend you to take some time adjusting to the sensation of electro-stimulation, and the movements of rig system, before tryin to fall asleep.

The EEG headset will be reading your brainwave to understand which state of sleep you are in. As you descend into deep sleep, your muscles relax. The system of rigs begins to gently lift you into the air, and moves you into a slowly turning

suspension. When you progress from deep sleep into the REM stage, the electrical signals generated by your dreaming brain will be interpreted into a sequenceof movement, and returned to your body as electric signals targeting specific muscles.

Please note that the sensation of electro-stimulation will wake you up during your dream. Before you fall asleep, you will be asked to customize the environment you'd wake up in. We recommend this experience to those who are eager to wake up from their dreams in a surreal way, and to those who are curious to explore how their bodies can move in dialogue with multipe agents (your dream state, machine intelligence, and your conscious self).



EEG HEADSET
Monitors your brainwave

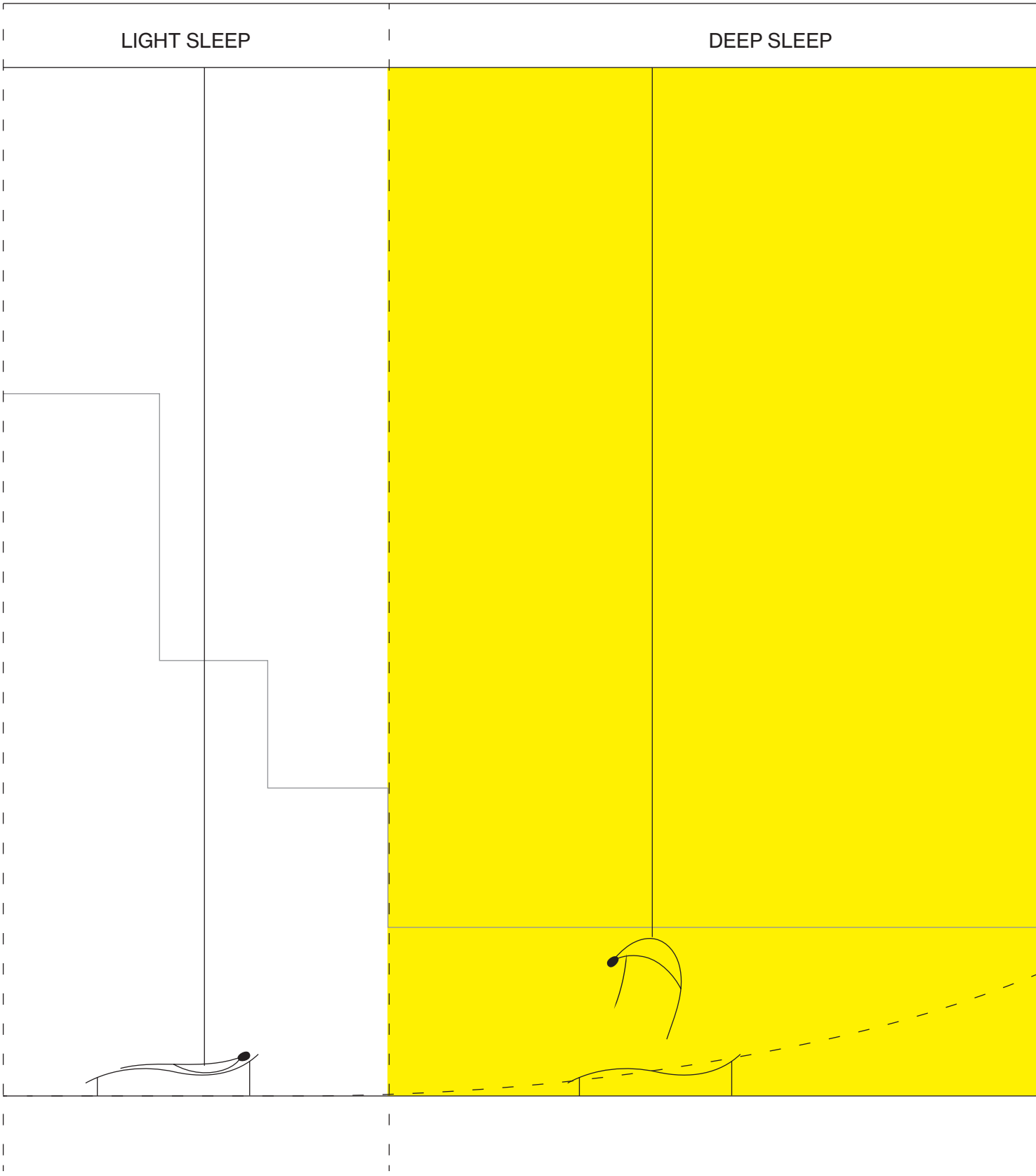
NECK SUPPORT
Protects your neck when you're being moved in your sleep

CORE CONNECTOR
Supports your weight in air by connecting your torso to the aerial rig.

ARMS CONNECTOR
Has electro-stimulation devices targetting specific muscles in your arms. Directs the broad gesture of your arms by connecting to the aerial rig.

LEGS CONNECTOR
Has electro-stimulation devices targetting specific muscles in your legs. Directs the broad gesture of your legs by connecting to the aerial rig.

FEET CONNECTOR
Connects your feet to the aerial rig.



You are the least likely to be awakened during deep sleep, which is the best time to gently transition into motion.

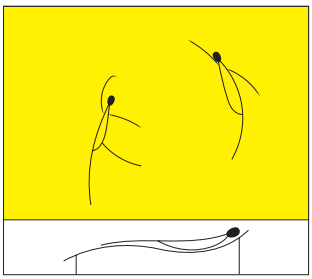
Each session lasts for one sleep cycle (approx. 1.5 - 2hrs), ending with you waking from your dream while dancing.

The Doppleganger

We recommend this experience to those who'd like to maintain the quality of their sleep. Upon waking up, you will review your dreaming state in movement as a film.

Before you fall asleep, you will be asked to choose a digital avatar that will dance when you dream. You will fall asleep wearing an EEG headset, which will be reading your brainwave to understand the state of sleep you are in. When you enter the REM state, which is the phase when you're likely to be dreaming, the patterns of your brain wave will be turned into sequences of choreography, which will be embodied by your digital avatar.

When you wake up from your dream, we recommend that you first take note of your dream, then watch the replay of your digital avatar dancing. As you watch the replay, you can edit the choreography as well as change your avatar. You will only be shown the dance corresponding to your last REM cycle. You can request to be awakened after each REM cycle(approximately every 1.5-2 hours) through the night.



(NEW SESSION)

DREAM DIARY

What did you dream about?

DRAWING PAD

ASSIGN TIMELINE

SAVE

REPLAY

TRIM

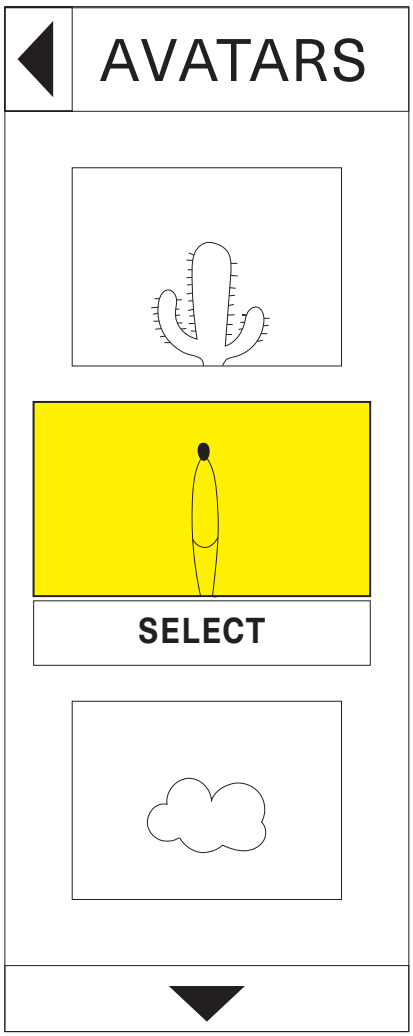
EFFECTS

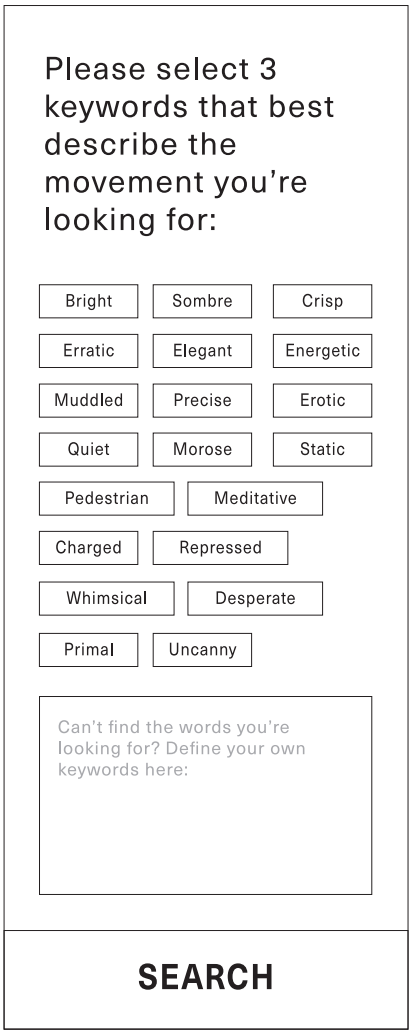
EDIT AVATAR

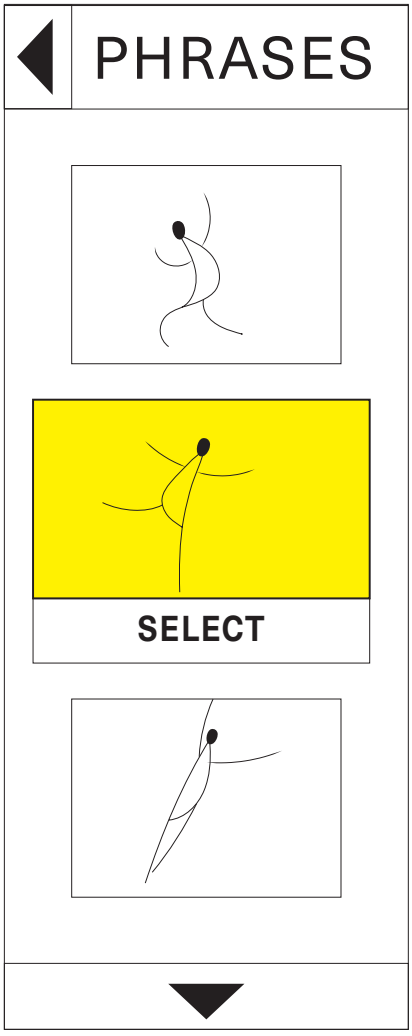
EDIT DANCE

EXPORT

The dream diary is a vital tool for you to retain the content of your dream, as you watch the replay of your dream dance. The more you remember, the more likely you will be able to adjust the choreography to better express what the dream means to you. We do not keep records of your dream diary without your explicit consent.







The Psychic

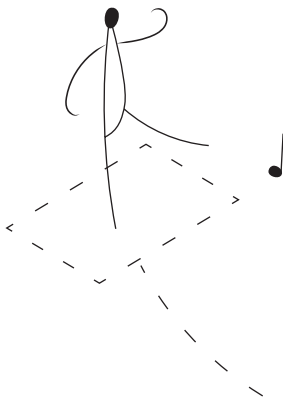
CAUTION: Not suitable for people with any implanted electronic device, children under 6 and pregnant women.

This experience is tailored for two participants: one person will be dancing to the other's dream. We recommend this experience to partners who are comforatble exploring movement, and want to explore intimacy and trust through the state of dreaming.

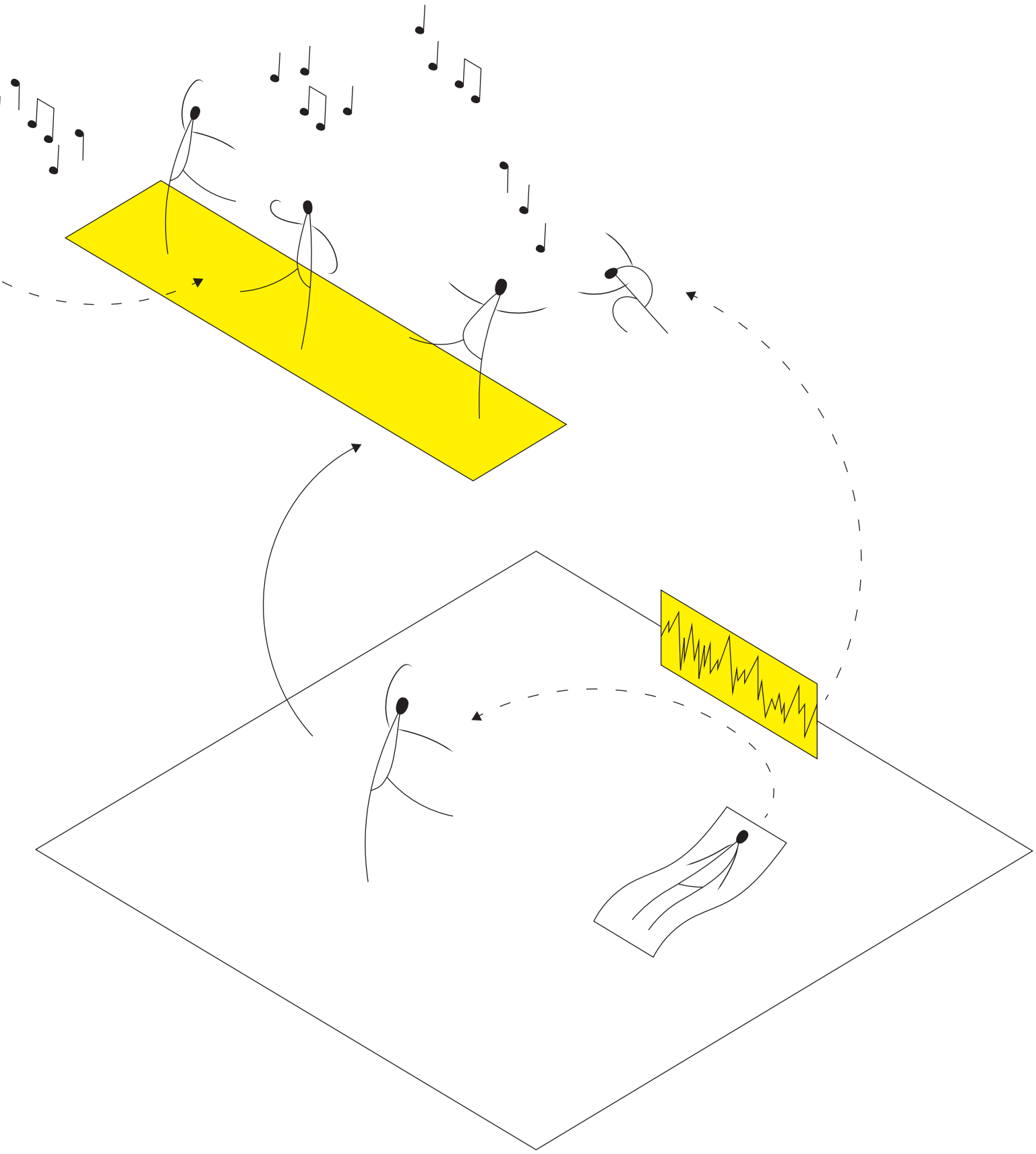
The dreamer will fall sleep in an EEG headset, which will be monitoring the state of their sleep by reading their brainwave. The dancer, awake in the adjacent chamber, will put on an electro-stimulation suit and familiarize with the sensation. The dancer can be connected to a rig system to dance in midair.

When the dreamer begins to dream, their brain wave data will be interpreted a sequence of movement cues, and sent to the dancer's suit as electric signals targeting specific muscles. The dancer will be moving to these electric signals.

The ensuing dance is a collaboration between the two partners and machine intelligence, which learnt to generate movement from brainwave patterns from a library of dance phrases. If you would like to use our facilities for a longer term creative project, you can train a machine on your own library of dance phrases, so you have more influence on the choreography of your dream dance.



You can record the dance sessions. When the dreamer wakes up, we recommend that they first write down their dream, then review the recorded dance. You can use our facilities to add music to the piece, revise the choreography, turn the dance into a duet, among others things.



How is your brain activity interpreted into dance?

We asked choreographers from 12 countries to create movement phrases inspired by the idea of dreams. Each movement phrase is shorter than 8 seconds. Dancers wearing EEG headsets, which captured their brain wave, performed the phrases for motion capture. So far, we have captured more than 360 movement phrases and their dancers' corresponding brain waves.

The Introductory Guide to EEG

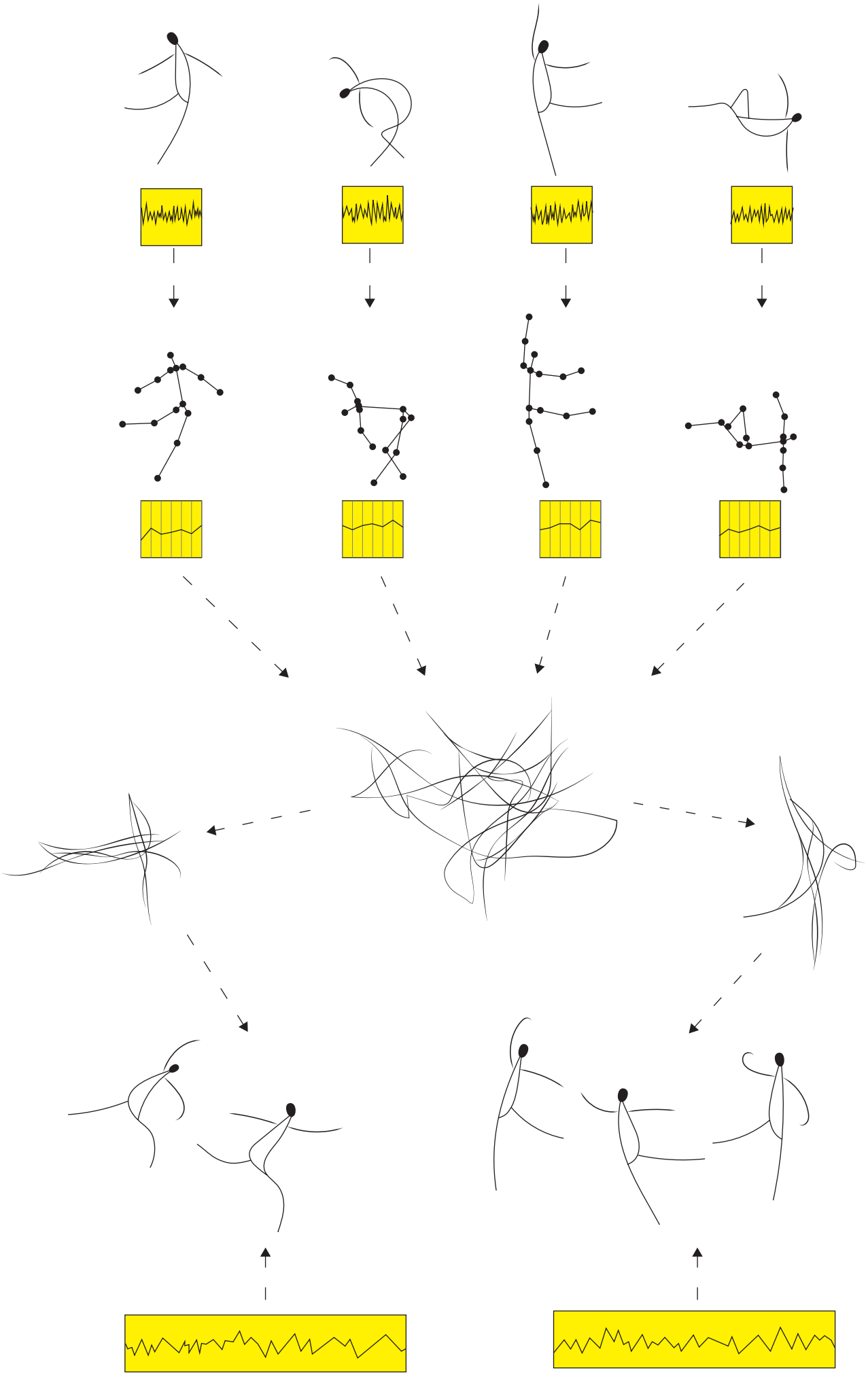
EEG stands for "electroencephalography" which is an electrophysiological process to record the electrical activity of the brain. EEG measures changes in the electrical activity of the brain produced. Voltage changes come from ionic current within and between some brain cells called neurons.

An EEG test evaluates the electrical activity of the brain. EEG scans are performed by placing EEG sensors – small metal discs also called EEG electrodes – on your scalp. These electrodes pick up and record the electrical activity in your brain.

Sleep as a biological problem: an overview of frontiers in sleep research

There is no doubt that electroencephalography was the first and only methodology for disclosing the relationship between sleep and brain activity. Electroencephalography shattered the concept that the brain is silent during sleep, and nowadays is used for monitoring sleep states.

We clustered these movement phrases based on their corresponding brain wave patterns and the quality of movements, to create our movement library. We then



trained a neural network on each cluster of phrases to generate new movement. Currently, our library has more than 1000 dance phrases.

At our facility, you fall asleep wearing the same kind of EEG headset that recorded the dancers' brain waves during their performance. While brain waves at each stage of sleep are distinct, REM brain waves, in particular, closely resemble the brain waves observed during wakefulness. When you enter the REM stage in your sleep, our computer program composes a sequence of dance using phrases from our library: the choice of phrases and their order depends on the incoming values of your brain waves. The resulting dance is choreographed by a remix of consciousness and intelligence.

We encourage you to provide your thoughts on how your dream dance may better reflect your dream state. Your feedback enriches our ongoing endeavor of giving movement to dreams.

Do you wish to further discus something?

If you have any questions or concerns, or would like to make a request, please dial **#3** on master control panel in your room. You will be able to speak to a technician.

You can also reach us by calling or texting **649-327-8076**.

We hope you find inspiration, discoveries and enrichment during your stay with us.