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[Brigitte Holzinger](#)^{*} and Severin Ableidinger

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Article

Unlocking the Potential: Lucid Dreaming as a Tool for Development and Innovation

Severin Ableidinger ¹ and Brigitte Holzinger ^{1,2,*}

¹ Institute for Consciousness and Dream Research, Vienna, Austria

² Sleep Coaching, Medical University Vienna, Vienna, Austria

* Correspondence: office@traum.ac.at

Abstract: Lucid dreaming is a dream in which one is aware that they are dreaming while dreaming as well as being able to influence the dream. It is utilized in scientific research to explore dreaming, in clinical context to treat nightmares, and in private settings to have fun, solve problems, and to train various skills. In this paper, based on an interview with a lucid dreamer, a fascinating, yet hardly described way to use lucid dreaming in sports and martial arts is presented. The dreamer used his lucid dreams to explore new movements and new possibilities in martial arts. For the interview, the guide from Schädlich and Erlacher [1] was used. The interviewee's lucid dream experience is compared to interviews of other lucid dreamers and their experience and to contemporary research on lucid dreams. While the potential of lucid dreaming is explored, the interviewee also mentions the possible shortcomings of lucid dreaming.

Keywords: lucid dreaming practice; creativity; insights; martial arts; sport; interview; qualitative; lucid dreaming

1. Introduction

Lucid dreaming describes being aware of dreaming while still in a dream and asleep. It further involves the ability to influence the dream, and to change the dream content and the dream plot. However, in many instances, the dreamer wakes up upon realizing that they are dreaming, or cannot influence the dream (e.g., lucid nightmares) [2,3]. We proposed to call these dreams, in which the dreamer has realized that they are dreaming but cannot change the dream content "pre-lucid" dreams [4].

The unique potential of lucid dreaming in giving the dreamer the ability to freely influence the entire dreamworld to their volition attracts widespread interest, and various online forums have been created for people to share experiences and tips for lucid dreaming (e.g., dreamviews.com).

Also in the scientific world, lucid dreams have received more and more attention. Lucid dreaming enables researchers to explore dreams, while they are still happening. Before this, it was difficult to assess exactly when and if a dream took place. For a while it was assumed, that REM-sleep is equal to dreaming, an assumption, which was often challenged, e.g., [5]. With lucid dreaming, dreamers can signal when they are in a dream. This is most often done with eye signals, which can then be seen using electrooculography (EOG) [6].

In addition, different usages of lucid dreams in clinical settings are being explored. Especially in the treatment of nightmares, lucid dreams being considered a reasonable strategy. It allows the dreamer to influence nightmares when they appear [7]. A major symptom of post-traumatic-stress disorder (PTSD) is recurring nightmares. Lucid dreaming therapy has been shown to be an effective tool to reduce stress and anxiety in PTSD patients, when used together with other therapy methods [8,9].

In private settings lucid dreams are used for various reasons. These include having fun and pleasure, changing nightmares to pleasant dreams, problem solving, enhancing creativity, and practicing skills [10]. One of the first to explore the possible use of lucid dreaming in practicing motor

skills was Paul Tholey [11]. He found in a series of interviews, that dreamers can perform complex motor movements in lucid dreams and that this practice shows benefits for waking performance.

A proposed theory behind motor skill practice in lucid dreaming comes from mental practice [12]. Mental practice has been shown to be efficient and effective in training a wide and diverse range of skills, from various sport-disciplines to medical procedures. The most prominent theory behind mental practice is called the motor simulation theory [13]. It states that motor imagery (mental practice) is effective because it activates similar motor systems in the brain as physical practice. The state, in which an action is practiced mentally, is called the “S-state”. It has been argued that this same theory can be used to explain effectiveness of lucid dreaming practice. The lucid dreaming state thus can also be seen as an “S-state”. The theory has been proposed that lucid dreaming can provide a more effective and immersive method for practicing and improving motor skills [12].

Support for this theory comes from empirical findings, showing similarities between dreamed actions and actions performed while awake. It has been shown that dreamed hand movements correlate with activation in the sensorimotor cortex [14]. Also, cardiovascular responses match dreamed movement and exercises [15]. Eye movements during dreaming often match the actual eye movements, which is being used to indicate lucid dreaming in research [6,16,17].

So far, the effects of lucid dreaming practice on motor skills have been quantitatively tested in a few studies practicing coin toss [18], finger tapping [19], throwing darts [20], and sprinting [21]. A meta-analysis of these studies found a medium positive effect size of lucid dreaming practice, however the effect did not reach significance [22].

In a series of interviews, dreamers were questioned about their lucid dreaming experiences, practicing various different sports and movements [1]. Most of them reported positive effects. They reported to have improved their physical performance through this kind of practice, but they also experienced other positive effects. These included strengthened confidence, finding new insights for their physical practice, improved flexibility, and positive emotions. They mostly described their dream experiences as very realistic, however, many found their movements in their dreams as less exhaustive and requiring less effort. Other descriptions include movements being more fluent, and being realistic or hyper-realistic, meaning that one is perceiving every single detail of their movements. There were also problems found in the lucid dreaming practice. These included problems with movements, partners, distractions, and remembering the martial arts form the dreamer wanted to practice.

The authors drew the conclusions, that lucid dreaming can be used to complement physical practice, and also act as a substitute. It can support the learning of new movements and improve movements and strategies. It can also lead to new insights and new experiences. They also hint at the possibility to use lucid dreaming practice without repeating movements, but by exploring new strategies or getting advice from a dream character.

It has often been speculated that a function of dreaming is problem solving and enhancing creativity. There are different theories proposing that the function of dreams is thinking and problem solving in a different biochemical state [23], or that dreams act as an “inspiration machine” [24]. Throughout history, there are many prominent examples and anecdotes about dreams giving new insights and solving specific problems, for example was the structure of the benzene ring allegedly found by Kekulé in a dream [25]. It was also proposed that lucid dreaming can boost creativity and problem solving. Some dreamers actively use lucid dreaming for this purpose. LaBerge and Rheingold [26] report the anecdote of a lucid dreamer, who use his dreams for computer programming. One study actively tried to encourage participants to solve problems using lucid dreams [27]. Lucid dreaming might be able to boost one’s creativity and problem solving abilities by providing new solutions and inputs, which one is not able to find while awake.

In this paper we want to connect to the interview series [1], by using the same interview guide. At the same time we highlight a possible use for lucid dreaming practice, which is hardly mentioned in the current literature. At first, we present the main findings of an interview with a teacher of martial arts. Afterwards the main points mentioned in the interview are discussed in relation to current findings in lucid dreaming research and the aforementioned interview study.

2. Materials and Methods

2.1. Participant

This paper describes the findings of a semi-structured interview with one interviewee. The interviewee was a 52 year old male from Austria.

The interviewee is a teacher for martial arts as well as a physiotherapist. He did practice lucid dreaming in the years 2000 to 2005 but does not practice lucid dreaming actively anymore. When he practiced lucid dreaming actively, he also practiced martial arts extensively. He practiced many different styles, like Wing Tsun, Tai Chi Chuan – Chen style, and Baguazhang, but also tried other styles, and even tried fencing. He also developed his own concept and style, which included various forms of self-awareness-training.

The interviewee was an acquaintance of one of the authors, Holzinger, as in 2000, he made contact, as he was interested in lucid dreaming. He volunteered for this interview and agreed with publication of the interview and the findings. At first, he talked freely about his experiences and journey with lucid dreaming, after this we used the questions from Schädlich and Erlacher [1].

2.1.2. Beginning of his lucid dreaming practice

He started to have lucid dreams spontaneously. In these dreams, he became nervous and consequently woke up, but he also realized the potential these dreams could have. He learned about the works of one of the authors, Holzinger, and they got into contact. He was relieved about lucid dreaming being a common phenomenon, which was also at the center of scientific research, and began studying it. He started reading about dreaming, both in scientific and other literature, and about techniques to induce lucid dreaming. He continued to try many different techniques, but also the knowledge, that many people do experience this phenomenon has helped him to relax and stay in lucid dreams for longer.

2.1.3. Lucid dreaming induction techniques

He tried sleeping glasses, which should help induce lucid dreams, but he was not satisfied with them, as they interfered with his sleep.

Another technique he used was music. When practicing martial arts while awake, he used to listen to music, mostly repetitive monotone music, which he said helped him to reach a trance-state. He used this music both during training and during sleep, which helped him to induce lucid dreams. However, he did not hear the music in his dream. Further, he applied the use of a dream- and sleep-journal and performed reality checks. He also recited and repeated texts and poetry.

He also had a sleeping ritual including relaxations techniques, like breathing techniques and body scans, but he also revisited his physical practice, especially before his naps. He did normally not have lucid dreams during night sleep but during a nap in the afternoon. In the morning and in the evening, he trained and taught in martial arts, but during noon and in the afternoon, he had spare time, which he used for a nap for about 45 minutes. During these naps, he almost always reached a lucid dream state.

2.2. Interview guide

The interview guide includes open and closed questions and inquires lucid dreaming frequency, motivation for lucid dreaming, sensory impressions during dreaming practice and dreamed movements, and other aspects. The full English interview guide can be found in [1].

One author translated the questions into German, another author checked the translations. The interview was conducted in person by both authors. The interviewee started by talking about his start and experiences from lucid dreaming. Then the interview guide was followed, but on a few occasions additional questions were asked, when it appeared interesting to gain more information.

2.3. Data collection and analysis

The recorded interview was then translated into English, and the main points summarized. For this, the topics from the original interview study [1] have been adopted. Because the interviewee often jumped between different topics, these have been summarized.

There was no further qualitative or quantitative data gathered.

3. Results

3.1. Overview of Lucid dreaming practice

While lucid dreaming, he mostly observed the dream, but also said he “prepared the room”, and chose which movements and techniques should be exercised. He then did not intervene but observed. By doing this he found different movements, with which he could alter the existing techniques. In his practice, one was the attacker, and the other one had to “answer” the attack by blocking, evading, etc. With his lucid dreaming practice, he found new ways and new motions to “answer” the attack, which, how he said, were “not present in his consciousness”.

The interviewee stated that during the afore mentioned timespan from 2000 to 2005 he dreamed lucidly about two times a week spontaneously during the night and about 3 to 4 times a week intentionally. After these years of lucid dreaming practice he stopped his practice, as he felt he accomplished enough through this technique. He also stated that his sleeping patterns slightly changed, and he did not want to disturb his nighttime sleep, so he stopped taking midday naps. But he would practice lucid dreaming again, if, as he says, his current tools are not enough to solve certain problems.

3.2. Motivation

His lucid dreaming practice was mainly motivated for self-discovery and for self-development. This was also his motivation behind studying martial arts.

Another motivation for him were Chinese martial art styles. As he says, in these often not everything is taught or descended from the original forms. So, one of the main motivations for him was to explore points and steps in these styles, where he could not progress rationally or otherwise. So, he tried to progress by practicing these techniques while lucid dreaming.

During his waking practice, he exercised with a partner, and rhythmically repeated movements, including attacking and defending via blocking, or evading. These were repeated until they were executed reflexively. During his lucid dreaming practice, he observed new ways in which the attack can be “answered”. He afterwards successfully implemented these new techniques. This boosted his creativity. He also says that he practiced other movements, which were performed alone, and included these in his lucid dream practice to find new ways and new forms.

He further used lucid dreaming to become more confident in some styles and to make himself more aware of his posture while practicing.

3.3. Positive effects of lucid dream practice on physical practice

His goal was not to improve his waking motor performance, so in his opinion, it did not improve through his lucid dreaming practice. The important goal of his practice was to find new “answers” to attacks, new movements and new techniques. Through his practice with lucid dreaming, he found new ways to creatively expand. He found new ways to approach whichever problem he faced at the moment and experienced technical development. Through his practice he also stated to have gotten more confident and improved his posture in certain martial arts forms.

Another positive thing for him were the lucid dreams, which he did not actively plan and prepare for. These were very emotional and important for him, and felt, as he states, like a “candlelight dinner with the soul”.

3.4. Integration of lucid dream practice into physical practice

He was always able to practice physically, so he did not need to use lucid dreaming practice as an alternative to physical practice. Later in his life, he had a leg injury but then he used lucid dreaming to improve his new own martial arts concept.

While he did practice martial arts, he did not practice combat sport, and so did not participate in competitions. Consequently, he did not use lucid dreaming to prepare for a contest. He said in his mind, every day was the important day. So, he did use lucid dreaming to mentally prepare himself for the next practice session.

Through his practice he learned many new things, new movements, and techniques. Later, he also used lucid dreaming for writing.

3.5. Important features and possibilities of lucid dream practice

He used to manipulate the dream by slowing down or even stopping the movements and observed the scene. His visual impressions were not that important for his practice. Instead he preferred a kind of “kinesthetic vision”, with which he also observed this stopped scene. This “kinesthetic vision” included primarily the movements and the feelings the movement brought. He compared it to playing a game of chess but without a clock, where one has the board in front of them and can take their time to think about the next move.

For constructing or changing his dream environment, he said, he used to construct a sparring partner and also instructed which movement should happen, but he said he also instructed the movement to practice during his waking practice as well.

He further states, to not have used lucid dreaming to adjust to certain situational conditions like a new or changed training environment, as he says change is inherent in martial arts, so there was no specific need to.

In his opinion, everyone can benefit from lucid dreaming. It depends on what one is looking for, but in general everybody can benefit, as it can be a place, where one’s soul speaks to oneself. Further, he states, it could be used to overcome emotional problems. He also recommends it for getting more creative. But he also notes, that learning to dream lucidly is a lot of work, and there might be more resource-saving ways to address the problem at hand.

3.6. Perception of movements

In his experience, movement felt the same as during waking. For his practice, it was important to feel the tension of the muscles and muscle chains. He felt and “saw” this via his “kinesthetic vision”. He further stated that points of friction and points of contact felt less intense, but otherwise felt the same as during waking.

Jumps and turns were slowed, as in general, everything was slowed down a bit. He said it felt similar to being underwater, except of course buoyancy. He said that this helped to see and perceive everything more consciously.

3.7. Perception of specific features

Gravity has been a bit less for him and nothing was quite as heavy as during waking, but stability and firm contact to the floor was given. He said for his styles, it was important to be “rooted” in the ground, and this was also given in his lucid dreaming practice. Muscle power was not as intense as during waking practice. Balance was the same in his experience.

3.8. Senses

His acoustic impressions were damped, but it was not completely silent. He again mentions the comparison to being underwater. Further, he states, that in his lucid dreams, there was not really any feeling of temperature. Most his other senses were also not present during his lucid dreaming practice, like smell, taste, but he sometimes experienced pain. His vision was not as important, as his “kinesthetic vision” prevailed. His background mostly disappeared. At the same time, he did

perceive his hands, as this was one of his reality checks to induce lucid dreaming. His face, head, and trunk were not really present, but his partner and equipment were there, even though he never saw the face of his partner.

While this was his experience for the lucid dreams in which he practiced martial arts, in other lucid dreams, his surroundings were very clear, and visual impressions prevailed.

3.9. Equipment, partners, and environment

The used equipment was not as heavy in his dreams, but the muscle tension, when using them, was the same as during waking practice. He created a partner and directed what movements to practice, although he never saw the face of this partner. He did not really perceive his surroundings, only his sparring partner was important. He said that there was hardly any surrounding or background. In a slightly exaggerated comparison, he mentioned a scene from the popular movie “matrix”, where there is a white training room without any surroundings.

3.10. Problems

For him, the greatest problem was to stay in the lucid dream, as he got too excited or too emotional at the beginning of his lucid dreaming practice. He dealt with this by studying more about lucid dreams, searching for tips, but also by preparing adequately before going to sleep. During his waking practice, he was very focused and prepared so that he would not be disturbed. This, he believes, might have also helped in his lucid dreaming practice, as he had never had the feeling during physical practice that something could come up and disturb them, so in the dream this confidence remained.

However, he also did find problems, when he started to exert too much control over the dream. Otherwise, he did not have any negative experiences with his lucid dreaming practice.

3.11. Preconditions and recommendations

Of utmost importance for him in his lucid dreaming practice was preparation, for example the sleeping ritual.

Important for learning to dream lucidly is, in his opinion, the willingness to learn it, as well as trusting that it will work, and one will profit from it. It would also be better if one had already experienced lucid dreaming before. He used it very practically orientated and thinks it is a very good tool, when one has a concrete question or problem. However other ways, which might be easier to learn, should be preferred, if it is difficult to dream lucidly for a person.

4. Discussion

The participant gave an interesting anecdotal report, of how lucid dreaming can be used to practice motor movements, in a yet hardly spoken of way in current literature. His lucid dreaming practice did not focus on learning new movements or fine-tuning them, but on creating new movements, solving problems, and finding ways to “answer the attack” in martial arts.

After spontaneously experiencing lucid dreams, the interviewee tried learning more about them, and used different techniques to induce them, like music, keeping a dream journal, reality checks, and relaxation. He also repeated texts before sleeping, which could be seen as a form of dream-incubation [28]. He mainly observed the lucid dreams, which lead to creative insight. Observing the dream, without exerting influence over it, has been called “dream witnessing” and is a tradition in Tibetan dream yoga [29]. His lucid dream practice, was not related to fine-tuning his skills, but to gain new skills, finding new ways, and solving problems. Another focus of his practice was self-exploration and development. He used his lucid dreams, to achieve progress in his martial arts when other ways failed. In accordance with his practice of observing the dream, he expressed the view to be careful when trying to exert too much control over the dream. This possible application of lucid dream, in finding new techniques could be interesting for both athletes and martial artists. However, as this was only a single report, further research should explore the potential of lucid dreaming in finding new movements and techniques, and getting insight in sports and martial arts.

The interviewee had most of his lucid dreams during midday naps rather than during night sleep. It has been shown that lucid dreaming during naps is much more likely to happen than during night sleep [30].

The only real problem the interviewee experienced with his lucid dreaming practice was that, at first, he could not stay in his lucid dreams. To solve this, he used relaxation techniques, but also learning about lucid dreaming made him more relaxed in lucid dreams, allowing him to keep dreaming. He also stated that he made certain to not be disturbed in his waking practice and not be distracted there, which he thinks helped him in his lucid dreaming practice. This might also be useful for other athletes and people who want to practice in their lucid dreams. Trying to keep their physical practice free of distractions might help making the lucid dreaming practice free of distractions as well. Distractions were one of the major problems not only in the interview study [1], but also in the study practicing dart throws, where distractions during the lucid dream was a main factor influencing the subsequent waking performance [20].

During his lucid dreams, movement felt mostly the same to him, but other senses were often damped. Temperature, smell, taste were not present, and acoustic impressions were damped. Also, gravity was less intense, as well as friction and muscle power, however he still had the feeling of being “rooted” in the ground. Everything was slowed down, which made his movements more conscious for him.

In the interview study [1], gravity was mostly described as either normal, or reduced, while for some it was always normal, for some it varied, and for some it was always reduced. Two participants also described stronger gravity while doing squats or push-ups. As for sound, experiences were very mixed. One participant did not experience acoustic impressions. For two participants, sound was much more vivid. Three participants said that lucid dreams always were “complete” meaning that all senses were present and similar to waking experiences.

For both the interviewee, and for the interviewees in [1], movement required less effort and was less exhaustive during lucid dreaming. This might enable the dreamer to extend their practice in a way, which would not be possible during waking. However, it could also be potentially dangerous, as one might subsequently overestimate their own abilities, which might lead to harm. Both experienced their movements very detailed and were aware of each step. This makes lucid dreaming very practical to improve and finetune one’s movement.

Vision was not as important for the interviewee. For him, the environment faded out, and only his movement, muscle tensions, and his sparring partner were of importance. In his lucid dreams a “kinesthetic vision” prevailed, which in current literature is often called kinesthetic imagery [31]. In the interview study [1], findings for vision were mixed, with some participants reporting colors as more vivid or contrasts as stronger, while some found their vision attenuated, because their focus was more on their body. One participant described their vision downgraded to about 20%. For some, kinesthetic imagery also was very strong.

This is seemingly in contrast to current lucid dreaming literature, where lucid dreams are often described as containing vivid visuals and exceptional brightness [32]. This hints at the flexibility of lucid dreams and the diverse environments that are possible in lucid dreaming practice, which possibly can be tailored to the specific needs of the dreamer. For the interviewee in this study, the feeling of his muscle tensions was important, as well as the contact points with his sparring partner and the movements of them. So, it seems, that everything not important got dismissed and the dream environment shaped according to his needs. This was also seen in the interview study [1], where certain senses were often damped and impression reduced, especially when these were not used or needed in order to practice the specific movements.

In mental practice, there is also a difference made between kinesthetic imagery and visual imagery [31]. There have been findings, that visual imagery and kinesthetic imagery might even correspond to different neural substrates [33,34].

For the interviewee, the creative aspects of lucid dreaming were of utmost importance. Finding new movements was one of the reasons for which he used lucid dreaming. In the interview study, four of the participants stated, that they got new insight from their lucid dreaming practice [1]. This

highlights and underlines the theory, that dreams can be used for insight and inspiration [23,24]. Especially lucid dreams can help to find new solutions, which one does not find while awake, as one can directly address the problem at hand [27]. The possibility to use lucid dreams creatively in martial arts and sports has so far hardly received any attention, so further research including more participants is necessary.

Lucid dreaming is recommendable for anyone to train their skills, boost their creativity, and find new unseen solutions to problems. The interviewee in this study however mentioned, that one needs the willingness to learn it, as it is not an easy process. Also, participants in the interview study mentioned the following preconditions and supporting factors for practicing lucid dreaming: discipline, concentration, patience, high motivation, intense engagement, but also having an open mind, and having fun with it [1]. Some suggested, that lucid dreaming practice might be especially useful and suited for martial artists, as both of these require discipline and focus. Martial arts also often include meditation practices, which is connected to lucid dreaming [35]. It was also recommended to have a basic idea of the movement one wants to train. Another tip for starting lucid dreaming practice was to include reality checks during physical practice to induce lucidity during sport dreams. The interviewee in this study also connected his physical practice to his lucid dreaming practice by playing the same music in both conditions.

Even though lucid dreaming is learnable [36], there is yet no reliable way to induce lucid dreams [37]. So, while it can be a powerful tool for many people, some people might experience difficulties and should focus on other tools which might be more attainable for them.

Focusing on lucid dreaming in sports as a way of simply practicing might be only one of many possibilities, but for athletes and researchers alike, it might be interesting to explore different usages of lucid dreams. For athletes, lucid dreaming might be a way not only to better learn and fine-tune a new movement, but also to create new movements and find better ways of moving. For researchers, creative aspects of lucid dreaming might be interesting to explore especially in athletes and martial artists.

5. Limitations

Only one person was interviewed for this paper, so the specific experiences mentioned might not be replicable for others. Further, as it contained self-reported lucid dreaming experiences, it is possible, that certain experiences were not lucid dreams but could have been waking mentations.

Also, the reported lucid dreaming practice took place a few years ago, so the interviewee might misremember certain things, or might only remember positive things about his practice, while forgetting failures in lucid dreaming practice and bad experiences.

As this is a qualitative documentation of this way of using lucid dreaming practice, quantitative studies should research the practical potential of this tool to boost creativity and gain new insights in martial arts and sports.

Lucid dreaming is learnable, but there does not exist an efficient and reliable method to induce lucid dreams. So, even though it might be a powerful tool for practicing and gaining new insights, the costs of learning lucid dreaming might be significantly higher than the possible reward.

It should also be mentioned, that concerns about lucid dreaming have been raised. It has been pointed out, some might use lucid dreams in a way, which may endanger their mental health [7]. Further, it has been found, that regular usage of lucid dream induction methods might lead to psychopathological symptoms, like confusion about their waking state and dissociation [38]. There also are concerns about lucid dream induction methods leading to poor sleep by promoting bad sleeping habits [39]. Especially methods like the Wake-up-back-to-Bed technique suggest waking up during the night, staying awake for some time and then going back to bed, which promotes sleep fragmentation and might lead to poor sleep quality. It has been shown that lucid dreaming frequency is connected to poor sleep, but also that this connection disappears, when correcting for nightmare frequency [40].

6. Conclusion

Lucid dreaming can be a powerful tool to find new ideas and create new techniques in martial arts. It gives the dreamer the ability to boost their creativity and expand their technical repertoire. However, this approach should be further explored, as only anecdotal evidence for the usability of this application is available. How it can be used in other sports is also unclear so far. It might also not be useful for everyone, as there does not exist a reliable way to induce lucid dreaming and learning to dream lucidly takes a lot of effort. There are also concerns about the implications of lucid dreaming practice for mental health and sleep quality.

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