# Paradoxic Intention as an Adjunct Treatment to Cognitive Behavioral Therapy for Insomnia

Markus Jansson-Fröjmark, PhD[a,*], Christina Sandlund, PhD[b], Annika Norell-Clarke, PhD[c,d,e]

**KEYWORDS**

• Insomnia • Cognitive behavior therapy • Paradoxic intention • Performance anxiety
• Sleep intention

**KEY POINTS**

- PI is an evidence-based single-component treatment of insomnia that has the potential to reduce sleep onset latency and the number of awakenings, by instructing patients to stay awake for as long as possible in their beds.
- The original theory is that PI reduces sleep-related performance anxiety, which allows for natural sleep initiation processes to take place, but there are other potential mechanisms, which the article also describes.
- Owing to the lack of studies regarding for whom PI works, clinicians' use of PI in the treatment of insomnia should be based on theoretic knowledge, clinical experience and the patient's needs, resources, and preferences, as well as available treatment options.
- If PI is given as a part of CBT-I, the clinician must consider the potential theoretic or practical clashes with other treatment components, such as stimulus control and sleep restriction.
- Future studies are needed to cover the knowledge gap on the effects of PI in populations in which CBT-I may be unsuitable, the effects of PI on daytime symptoms, how long the effects last for, patients' adherence, side effects, and mechanisms of change.

## BACKGROUND

One of the first psychological treatment components for insomnia disorder that was described in the literature is paradoxic intention (PI). As early as the 1970s, Ascher and Efran[1] reported on this new treatment technique and the efficacy of PI in 5 cases with sleep-onset insomnia.[1] The investigators described that they instructed 5 participants with insomnia to "try to remain awake," rather than to focus on trying to fall asleep. In the first case series, PI was used for 2 weeks, resulting in a marked reduction in sleep onset latency. Another interesting finding to emerge from the case reports was that the patients reported difficulty in adhering to PI because they had fallen asleep too quickly: a paradoxic effect.

Although the basic instruction of staying awake has remained unchanged, the rationale for PI has varied over the years (**Table 1**). In the first

[a] Department of Clinical Neuroscience, Centre for Psychiatry Research, Karolinska Institutet & Stockholm Health Care Services, Competence Center for Psychotherapy Research and Education, Liljeholmstorget 7, Stockholm 117 63, Sweden; [b] Department of Neurobiology, Care Sciences and Society, Academic Primary Health Care Centre, Karolinska Institutet, Solnavägen 1 E, Stockholm 113 65, Sweden; [c] Centre for Research on Children's and Adolescent's Mental Health, Karlstad University, 651 88 Karlstad, Sweden; [d] Department of Law, Psychology and Social Work, Örebro University, Box 1252, Örebro 701 12, Sweden; [e] Faculty of Health Sciences, Kristianstad University, Kristianstad SE–291 88, Sweden
* Corresponding author.
*E-mail address:* markus.jansson-frojmark@ki.se

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**Table 1**
**Description of different versions of paradoxic intention**

| Name | Core Instructions (Brief Summaries) | Comment |
|---|---|---|
| Paradoxic intention: type A instructions | Lie comfortably in bed, in a dark room, with your eyes open. Try to remain awake for as long as possible, without engaging in sleep-incompatible activities | This is the original version, which is considered "core" PI[2] |
| Paradoxic intention with reframing instructions: type B instructions | Lie comfortably in bed, in a dark room, with your eyes open. Try to remain awake for as long as possible, without engaging in sleep-incompatible activities. Observe your thoughts, so that they can be used in future psychotherapy sessions to improve your insomnia treatment | This version has mainly been used as an active control condition in PI studies or other insomnia treatment studies[4,5,7] |
| Paradoxic intention combined with relaxation instructions | Lie comfortably in bed, in a dark room, with your eyes open. Use relaxation exercises for longer than you would usually, even if it means fighting off the urge to sleep. A more relaxed state will allow you to fall asleep better | To the best of our knowledge, this version of PI has only been tested as an addition to established relaxation exercises, which had been previously unsuccessful in shortening the patients' sleep onset[1] |
| Paradoxic intention with "give up trying" instructions | Lie comfortably in bed, in a dark room, with your eyes open. Give up trying to fall asleep, without engaging in sleep-incompatible activities. This will make your time in bed less distressed, and you will be more rested in the morning | Only found in 1 study.[6] It is remarkably similar to later ACT approaches to sleeplessness. |

*Abbreviation:* ACT, acceptance and commitment therapy.

empirical study by Ascher and Efran,[1] the core instruction of PI was "try to remain awake," and the rationale given to 3 of the patients was that observing thoughts before sleep onset might provide information on how to deliver therapy more effectively. Another type of rationale, which was delivered to the remaining 2 patients in the study by Ascher and Efran,[1] was to instruct patients to resist the urge to sleep and to apply relaxation in bed to reach a satisfactory level of relaxation and subsequently to be able to fall asleep. A third type of PI was also described in an article by Ascher and Turner,[2] in which patients were instructed to apply PI while keeping their eyes open and lying comfortably in bed or in a dark room (also known as Type A instructions). Based on how PI is used in later studies, we draw the conclusion that the last rationale by Ascher and Turner[2] seems to be the one that nowadays is regarded as "true" PI, for example, described by Espie[3]; this also means that the first 2 types, which involve observing thoughts or applying relaxation, seem outdated in the treatment literature.

How is PI practiced today? Although the use of PI is likely to differ across clinicians and settings, we propose that the approach by Espie[3] is comprehensive yet simple. Espie[3] suggests that the first step with the patient is to elaborate on a good sleeper's routines, mainly that the normal sleeper does not deliberately or anxiously try to influence sleep. It is also recommended in the approach to ask the patient to complete a sleep effort scale (eg, the Glasgow Sleep Effort Scale), but fill out the 7 items pretending to be a good sleeper, so that the patient sees low or nonexistent sleep effort in practice. The next step is to consider the patient's insomnia as a "sleep effort syndrome," a state in which the patient sees sleep

as an effort and is preoccupied with falling asleep. Espie[3] proposes that drawing parallels to other problems or situations might be helpful at this stage, for example, by contrasting sleeping at home and somewhere else, trying too hard when performing a sport, or attempting to remove a thought or tune from one's head. The next and final step is when PI is introduced and implemented. In this step, Espie[3] mentions 2 methods for giving up trying to sleep. Method 1 consists of a "giving up trying" approach, labeled "turning the tables." In this method, acceptance and mindfulness are central ingredients, for example, accepting insomnia as a part of life and viewing wakefulness as an opportunity. Method 1 takes inspiration from the "give up trying" approach that was developed by Fogle and Dyal[6] (see **Table 1**). Method 2 is more clearly paradoxic, in which the patient encourages unwanted insomnia symptoms by trying to stay awake. Method 2 also advises the patient to lie comfortably in bed with eyes open, give up sleep effort and concern about being awake, and continuously repeating the core instruction of trying to stay awake. Both methods are thus "giving up trying" approaches at the core, however, with different means to get there. In method 2, the patient should go to bed at a normal time when feeling sleepy and turn the lights off, followed by trying to stay awake.

Just as the methods of PI have varied over time, the theoretic foundations of PI have also developed. In the beginning, PI was centered on the idea that patients with insomnia are unable to grasp that sleep is an involuntary physiologic process, and that they, therefore, muster their full effort to initiate sleep.[1] Furthermore, Ascher and Efran[1] suggested that the intentional effort to try to fall asleep leads to frustration and activation of the autonomic nervous system, which interferes with sleep initiation. As a result, a vicious cycle has been formed, in which self-monitoring, heightened arousal, performance anxiety, sleep effort, and failure to fall asleep impact upon one another. In this original proposal, PI is assumed to work by reducing performance anxiety.[1] In a subsequent model, PI was viewed in the light of the attention-intention-effort (AIE) model.[8] In the AIE conceptualization, it is proposed that selective attention to threatening sleep cues, such as a beating heart and external noise, triggers explicit intention to sleep, which leads to the inhibition of normal dearousal.[9] As a result, the amplified intention to sleep triggers direct and indirect sleep effort, such as actively trying to sleep and extending time in bed. In the AIE model, PI is seen as an intervention that manipulates the intensified sleep intention by remaining passively awake or by giving up any direct intention to try to fall asleep. Besides performance anxiety and sleep intention as theoretic foundations for PI, there are a few additional suggested mechanisms. First, PI could also be viewed as enabling exposure to learned feared stimuli in bed[10]. Lundh[10] suggests that certain "awake" stimuli, such as the alarm clock next to bed or the trapped air in the bedroom, may trigger activation of the central nervous system, for example, by increasing heart rate and thereby prolonging sleep initiation. By being instructed to stay awake in bed, the effects from the conditioned stimuli might habituate, as the patient perceives them fully without attempting to "avoid" or "flee" (as by trying to fall asleep). A second additional mechanism, not yet described in the literature to our knowledge, is sleep drive. We suggest that PI may work, at least partly, through the buildup of sleep pressure when patients with insomnia experience frequent and extended awakenings at night, that is, objective sleep loss. As a result, we propose that sleep pressure is an important establishing condition or mechanism through which PI influences insomnia symptoms, in particular sleep initiation difficulties. Third, acceptance of unwanted, inner experiences, such as distressing thoughts, negative feelings, and aversive bodily sensations, may also be a mechanism through which PI works.[11] In the context of PI, it is possible that the instruction of "try to remain awake" enables patients with insomnia to adopt a stance where the struggle to fall asleep is abandoned, and instead means rehearsing acceptance of unpleasant, inner experiences.

PI shares some features with other therapy techniques, which should be distinguished from PI. For example, cognitive therapy for insomnia can include the "fear of bad sleep" behavioral experiment in which patients test their beliefs about what will happen if they get less sleep than they think they need[12]; this commonly means planning an evening in which the patient goes to bed later than usual, gets up at their usual time, and evaluates the consequences the day after. The difference between PI and this behavioral experiment is that in the former patients are instructed to be (passively) awake in bed, whereas in the latter patients are active in one way or another outside their bedrooms. Also, the behavioral experiment is usually introduced late in the treatment, when patients have developed skills to handle insomnia and had some success in improving their sleep,[12] whereas PI is introduced as the only technique or introduced early in CBT-I.

Another therapy technique that is similar to PI is the use of *acceptance* in bed while waiting for

sleep to come. This technique stems from Acceptance and Commitment Therapy (ACT) paradigms, which have started to gain recognition as an insomnia treatment.[13] Instead of trying to fall asleep, patients are instructed to manage presleep distress by ceasing the struggle for control over sleep or thoughts, and instead practice acceptance of whatever thoughts, feelings, and sensations may arise. Falling asleep quickly is not the goal, although it might be a side effect. This approach is similar to one of the types of PI administration (also known as Type B), in which patients are instructed to focus on their thoughts and gather information for the therapist on their presleep thought content,[1] which might make a person more of an objective observer than a fully immersed "thinker" and in turn work through the same mechanisms as acceptance. It should be noted that the acceptance technique does not include instructions to report back to the therapist. In some studies, the Type B version includes the creation of exposure hierarchies of distressing thoughts and desensitization training during the following sessions, although we have not been able to find support for this use outside of clinical studies where Type B was the control condition. It should be mentioned that one early PI study used a "give up trying" instructions (see also **Table 1**), which seem analogous to later acceptance techniques, because the goal was "a genuine acceptance of the status quo." Patients were informed that by giving up efforts to fall asleep, they would be less anxious and feel more comfortable about being awake during the night; they were explicitly informed not to expect this approach to affect their sleep.[6]

## *Research*

The evidence base of PI has been assessed several times over the years. The American Academy of Sleep Medicine (AASM) has conducted 3 reviews since the 1990s. The first AASM review identified 6 studies that had examined the efficacy of PI for patients with sleep-onset insomnia.[14] Although 4 studies in the review from 1999 demonstrated that PI was more efficacious than control conditions in reducing sleep onset latency, 2 trials did not observe significant differences between PI and control groups. Using other passive and active control conditions as comparisons, meta-analytic calculations demonstrated that the between-group effect sizes were d = 0.46 for total sleep time as an outcome, d = 0.63 for sleep onset latency, d = 0.73 for number of awakenings, and d = 0.81 for wake after sleep onset. As a whole, the AASM review from 1999 stated that PI is an empirically supported intervention. An updated review from the AASM[15] also categorized PI as a well-established treatment. Several methodological and statistical limitations hamper the conclusions from the AASM reviews,[14,15] such as including only examining trials up until 2004, only using 2 databases when identifying relevant studies, only examining the efficacy of PI based on nighttime symptoms, unclear reporting of methodological and statistical aspects in the quantitative assessment of PI, and using outdated criteria for classifying treatments as well-established treatments and probably efficacious treatments. The latest AASM report[16] consists of a systematic review approach combined with meta-analytic estimations and a summary assessment of the evidence of various behavioral and psychological treatments for insomnia disorder. The review aimed to determine clinically significant improvements based on outcomes the investigators considered critical and important. Only 2 of 5 reviewed studies on PI met the criteria and were included in the meta-analysis. The report investigators conclude that the overall quality of evidence is very low for the use of PI due to imprecision, inconsistency, and risk of bias,[16] and they did not recommend PI as a single-component treatment in their succeeding clinical practice guideline for behavioral and psychological treatments for insomnia.[17]

Two of this article's authors performed a narrative review in 2018, which concluded that PI has empirical support for insomnia.[18] Because the narrative review did not evaluate the efficacy of PI in quantitative terms and did not explicitly discriminate between outcomes (eg, nighttime and daytime symptoms), we, together with colleagues, performed a systematic review and meta-analysis of the efficacy of PI.[19] Based on 10 included trials, the meta-analytic calculations showed that PI resulted in large improvements in central insomnia symptoms, relative to passive comparators. More specifically, PI was largely superior to passive comparators in reducing sleep initiation and the number of awakenings (Hedge's g = 0.82–1.71). Compared with active comparators, the improvements were less pronounced, but still moderate for some key outcomes, for example, on difficulty falling asleep (g = 0.69) and number of awakenings (g = 0.55). PI also resulted in large decreases in sleep-related performance anxiety (g = 1.04), one of several proposed mechanisms of change for PI. A limitation this last review shares with its predecessors is that the only evaluated measure of sleep-maintenance insomnia is the number of awakenings. Although fewer awakenings might be analogous to lessened

sleep maintenance issues, the duration of unwanted time awake is unknown and might be thus unchanged or even increased after treatment. This fallacy in the reviews is due to how sleep maintenance was measured in the included studies. As a result, conclusions regarding the effects from PI on sleep-maintenance insomnia are limited to the number of awakenings.

Although the latest AASM review and meta-analysis reports the quality of evidence for PI as very low, there are, as mentioned earlier, other reviews and meta-analyses that demonstrate the efficacy of PI to be of clinical value. Besides the potential clinical benefits of PI, there might, however, also be negative effects following administration of PI. To our knowledge, there is only 1 trial that has specifically assessed and reported on adverse events or deterioration. More specifically, a case series with 6 patients with sleep-onset insomnia[20] reported that sleep onset increased for 3 of 6 patients using PI. The investigators speculate that the deterioration observed in the 3 patients might be due to PI in itself, that PI might be less appropriate for those with severe sleep-onset insomnia, and that it was "too easy" for the 3 patients to remain awake using PI. However, a common denominator for many therapies is that positive outcomes partly depend on the participants' ability to endure discomfort in the beginning of therapy. For example, in sleep restriction therapy, participants must withstand increased sleep performance anxiety and sleepiness before experiences of improved sleep and daytime functioning.[21] Moreover, exposure to fears is a common intervention for anxiety disorders,[22] and parallels can be drawn to PI and fears of not falling asleep. However, because none of the remaining PI studies systematically assessed adverse events or deterioration, more research is warranted to examine whether PI produces negative effects among patients with insomnia in general or in subgroups of patients.

As a whole, we argue that PI should be viewed as a potentially efficacious intervention in the context of insomnia. Before more firm conclusions can be made, more rigorous trials are needed that include patients with a current definition of insomnia disorder, use a broad assessment of clinical benefit and potential negative effects, and explore moderators and theory-based mechanisms of change.

## *Clinical Relevance*

The relevance of implementing PI in clinical settings could be argued to stem from 2 sources: one based on the strengths of PI and one based on the limitations of CBT-I. The clinical benefits of PI have already been reported on earlier, with the most marked outcomes improved being reductions in sleep initiation and maintenance problems. In fact, if the efficacy of PI is compared, as demonstrated in the meta-analysis performed by Jansson-Fröjmark,[19] with other cognitive and behavioral interventions (eg, CBT-I, relaxation, stimulus control, psychoeducation, and sleep restriction) for insomnia disorder, as shown in a recent meta-analysis,[23] there are clear clinical benefits of PI. Relative to other cognitive and behavioral interventions, PI results in larger effect sizes (relative to passive comparators) on sleep onset latency (0.57 vs 0.82), number of awakenings (0.28 vs 1.10), and total sleep time (0.16 vs 0.51), but a smaller effect size on sleep efficiency (0.71 vs 0.00). Although comparisons of this sort are difficult, a tentative conclusion might be that PI has at least similar effects as other evidence-based, psychological interventions on sleep/insomnia.

The recent review and meta-analysis[19] also demonstrated that PI results in a large reduction in sleep-related performance anxiety, relative to passive comparators; this is a finding that could be suggestive of the fact that reduced performance anxiety is a mechanism of change for PI and possibly also an etiologic factor, which is an expected result according to theory.[1] If sleep-related performance anxiety is indeed a maintaining factor for insomnia disorder in general, this could strengthen the clinical relevance of PI. More specifically, patients with elevated sleep-related performance anxiety could be offered PI as a first-line or at least an early intervention during CBT-I. If this proposed pathway is to be implemented in clinical settings, a rigorous randomized controlled trial is first warranted. Another advantage of PI is that it may be relatively easy for clinicians with little or no psychotherapy training (eg, physicians, nurses, and physiotherapists) to learn to deliver, and to use in a variety of clinical settings, such as primary health care, nursing homes, and psychiatric settings.

Another way to underscore the clinical relevance of PI is to focus on the limitations of CBT-I. Despite the effectiveness of CBT-I, the AASM reviews from 1999[14] and 2021[16] both concluded that about a half will fail to achieve clinically meaningful improvements.[16] Adjunct interventions for insomnia are thus in place and may help meet individual treatment needs.

Although access to CBT-I has increased in recent years, its long, multicomponent nature makes it challenging to implement and resource demanding in clinical settings. Digital solutions

can help increase access to CBT-I,[24] but they do not suit everyone.[25] Moreover, no matter whether it is delivered in person or digitally, CBT-I requires active engagement in methods that can be mentally and physically challenging, and not everyone is able or motivated to engage fully in treatment.[26] Some CBT-I components, such as the core components sleep restriction and stimulus control, might also be less appropriate for certain patients or subgroups. Initially, sleep restriction therapy increases daytime sleepiness and impairs vigilance[27]; this may make CBT-I inappropriate for certain groups of people, such as heavy machinery operators, professional drivers, people predisposed to mania/hypomania, and people with seizure disorders.[17] Moreover, sleep restriction requires prerequisites for regular sleep habits, and is therefore not suitable for shift workers. Stimulus control therapy may increase the risk of falls in certain populations, such as older adults with frailty and people who use hypnotics.[17] PI may thus be useful as a second-line treatment of people for whom CBT-I is not appropriate or suitable.

## *Considerations*

In this section, some considerations regarding the use of PI are suggested. The first consideration pertains to for whom PI could be used and for how long. The later considerations regard the use of PI as a single adjunctive therapy or as a component of CBT-I.

### *Paradoxic intention: for whom and for how long?*

Owing to the complete lack of research teasing out how to match patients to treatments in this area, we would argue for a more theory-driven approach when considering PI as a potential adjunct treatment. Based on the potential mechanisms of change for PI, as mentioned in the background, there are at least 5 factors/models that could be of relevance; performance anxiety, sleep intention, exposure, sleep drive, and acceptance. First and second, for patients with elevated sleep-related performance anxiety or sleep intention, PI could be an effective adjunct or second-line intervention. The obvious candidate would be a patient with sleep-onset insomnia who acts as if sleep initiation should and can be actively controlled. In a similar vein, PI could function as a test of patients' dysfunctional beliefs about their ability to cope with sleeplessness: similar to the "fear of poor sleep" as described by Ree and Harvey.[12] Third, PI could also work through exposure to learned, feared stimuli in the bed or bedroom,[10] that is, "awake" properties. As mentioned previously, it is not uncommon that patients report that objects or qualities in the bedroom are able to trigger activation of the central nervous system, for example, by increasing heart rate and thereby prolonging sleep initiation. Fourth, we also suggest that sleep drive is a necessary ingredient in the efficacy of PI. For example, a patient who has built up an extensive sleep drive during the past days (eg, through frequent and extended awakenings at night) is, according to us, a good candidate for PI, whereas a patient with limited sleep drive (eg, through a couple of good nights of sleep) is a less optimal candidate for PI. Fifth, patients struggling with falling asleep and not allowing unwanted, inner experiences, such as intrusive thoughts, to be part of the daily experience may also be good candidates for PI. For such a candidate, the PI instruction of "try to remain awake" might result in less of a struggle with sleep and more of accepting the present, "awake" moment.

Moreover, it is possible that persons with sleep-onset insomnia, as opposed to sleep-maintenance insomnia, will have a more positive response from PI, because sleep drive is generally stronger during sleep onset and is reduced during nightly awakenings because of a couple of hours sleep. In the recent review and meta-analysis on PI,[19] 7 studies included participants with sleep-onset insomnia, and 3 studies included participants with mixed sleep-onset and sleep-maintenance insomnia. Further research is needed to determine if PI is more effective in sleep-onset insomnia than in sleep-maintenance insomnia. Also, future studies should report outcomes on both the number of awakenings and the total time awake after first sleep onset. In the context of sleep drive, it should also be underscored that other treatment components, such as sleep restriction, are viable routes when patients present with a significant sleep drive. The use of PI might also have the benefit of preventing patients from using sleep-disturbing behaviors in bed and exposing them to their own thoughts, feelings, and bodily sensations. For patients who always "need" to be occupied by something, and use devices (eg, smartphones) to fill their unwanted sleepless time, PI might give them a chance to experience what lying in bed without distractions might be like.

The length of time that PI should be administered to demonstrate an effect is another clinical consideration. In most studies, PI is instructed at the first session, and the following 2 to 3 sessions are devoted to problem solving and fine tuning. In a few studies, patients were cautioned not to expect improved sleep until after a few weeks of treatment.[2,5] This caveat might be wise because

one study reported that a third of the participants experienced longer sleep onset latencies during the first week of PI, although sleep onset had shortened by the end of treatment.[28] This report corresponds with our clinical experience, wherein some report prolonged sleep onset after PI. (Regrettably, we do not know how their trajectories would have played out because our patients were instructed to try another technique instead, during comprehensive CBT-I with new techniques being introduced most weeks).

### *Paradoxic intention as an adjunctive treatment to cognitive behavioral therapy for insomnia*

Given the current evidence base, it is reasonable to view CBT-I as a first-line intervention for insomnia disorder, and PI as second option after CBT-I has been considered or attempted, just like pharmacotherapy in the European guidelines for insomnia treatment.[29]

The questions then are under what circumstances PI could be seen as an adjunct treatment to CBT-I and how PI could be implemented. It is important to emphasize that PI is not commonly considered as an ingredient in current CBT-I,[19] although some studies have included it.[30,31] Instead, standard CBT-I is commonly described as comprising psychoeducation, sleep restriction, stimulus control, sleep hygiene instructions, dearousal components, and cognitive components.[29] At present, there is little research support for PI to be used before or concurrently with CBT-I. Rather, PI may be used for patients who do not respond at all or inadequately to standard CBT-I, because it initially was tested on patients who did not respond to behavioral therapies for insomnia.[1] Decisions to implement PI for patients who do not respond successfully to standard CBT-I should be based on a thorough screening for maintaining factors of insomnia that confirms the presence of sleep performance anxiety or sleep effort, for example, by using the 7-item Glasgow Sleep Effort Scale[8] or other potential sleep-disturbing mechanisms that PI has the potential to affect. A new treatment rationale based on the assessment and the patients' preferences could then be tailored, which may include PI if relevant.

### *Paradoxic intention as a part of cognitive behavioral therapy for insomnia*

Although uncommon in the literature, PI has been included in some effective CBT-I therapies.[30,31] When using PI as a component of CBT-I, one needs to consider that some CBT-I components might be difficult to integrate with PI, because the rationales are incompatible. We argue that this difficulty is specifically salient for 3 treatment components: sleep restriction, stimulus control, and dearousal components. First, the core of sleep restriction—restriction of time in bed—is not easily assimilated with PI.[32] In fact, "restricting time in bed" means less hours in bed and thereby limited opportunities for PI to take place. Second, the first 3 instructions in stimulus control are not in line with PI, namely, "Lie down to go to sleep only when you are sleepy," "Do not use your bed for anything except sleep," and "If you find yourself unable to fall asleep, get up and go into another room." The mismatch in key treatment elements between PI and sleep restriction and stimulus control are so large, leading us to think that they are not compatible to implement at the same time. Instead, we advise clinicians to use these 2 treatment components in a sequential manner, for example, first implementing sleep restriction and then PI, or vice versa, as in the studies that have included PI in CBT.[30,31]

Dearousal components, such as relaxation training and mindfulness, might be more easily integrated with PI as long as they are practiced and implemented outside bed. However, if the therapeutic aim is that the patient uses these components in bed, a mismatch is possible, although it should be noted that PI has been successfully added to relaxation.[1] Cognitive techniques may be easier than behavioral techniques to combine with PI. For instance, if using the reframing version of PI (instructions to stay awake to observe one's thoughts) this could have the added benefit of gathering information on the patient's dysfunctional beliefs about sleep, negative repetitive thinking, and other sleep-disturbing thought content or inner behaviors.

To date, studies have not investigated whether including PI in CBT-I improves treatment results. However, a qualitative study,[26] exploring experiences of group CBT-I in primary health care,[31] has found that participants may experience benefits when PI is included as a component of CBT-I. In that study,[31] PI was introduced as a 1-night behavioral experiment before the introduction of stimulus control and sleep restriction. The findings indicated that participants increased their ability to dedramatize sleep and sleeplessness by accepting the situation and letting go of the idea that they had to force themselves to sleep.[26] Thus, PI may have served as a learning experience, at least for some participants. However, participants did not name PI as an important treatment component. One even stated that PI was not useful at all, because she fell asleep immediately, and thus felt she failed to follow the instructions (ie, try to stay awake in bed). Albeit an amusing anecdote, this patient's experience may be related to

**Table 2**
**Components in cognitive behavioral therapy for insomnia that primary health care patients reported as useful directly after therapy and 1 year after therapy**

| | Posttreatment (n = 96) | 12 mo Posttreatment (n = 69) |
|---|---|---|
| Components | % (n) | % (n) |
| Psychoeducation | 85.4 (76) | 71.0 (49) |
| Sleep hygiene | 39.6 (38) | 66.7 (46) |
| Breathing exercise | 62.5 (60) | 42.0 (29) |
| Paradoxic intention | 30.2 (29) | 23.2 (16) |
| Worry time | 29.2 (28) | 7.2 (5) |
| Stimulus control | 17.7 (17) | 30.4 (21) |
| Sleep restriction | 71.9 (69) | 24.6 (17) |
| Cognitive restructuring | 47.9 (46) | 37.7 (26) |
| Strategies to deal with hypnotics | 33.3 (32) | 31.9 (22) |
| Strategies to deal with stress | 33.3 (32) | 20.3 (14) |
| Strategies to deal with daytime symptoms | 28.1 (27) | 24.6 (17) |
| Keeping a sleep diary | 55.2 (53) | 7.2 (5) |

Data were collected in a randomized controlled trial of group CBT-I in primary health care[31] and have not been published previously.

personality traits associated with insomnia, such as concerns about making mistakes and setting high personal standards,[33] neuroticism, and conscientiousness,[34] or just unclear PI instructions.

Moreover, the previous study of group CBT-I in primary health care[31] included follow-up questionnaires about the perceived usefulness of each CBT-I component in the intervention (unpublished results). Immediately after therapy, 30.2% (29 of 96) found PI useful and responded that they would use it in the future, and 1 year after therapy, 23.2% (16 of 69) found it useful (**Table 2**). This finding suggests that it could be reasonable to include PI in CBT-I. It should be noted that PI in this study only consisted of one session. A greater dose might render the technique useful for more people.

## SUMMARY

This article aimed to review and discuss theoretic and clinical frameworks for PI, the current evidence base for PI, as well as its clinical relevance, and considerations needed when PI is used as an adjunct treatment to CBT-I or as a second-line intervention for insomnia.

The instructions for PI and the rationale given to participants have varied over the years. The most common and prevailing instructions seem to be those described in 1979[2]: "Lie comfortably in bed, in a dark room, with your eyes open. Try to remain awake for as long as possible, without engaging in sleep incompatible activities." The rationale behind these instructions, which is also shared with the patients, is that conscious intent to fall asleep may disturb natural sleep initiation processes, and that PI aims to reduce sleep-related performance anxiety. The rationale is in line with the AIE pathway for the development of insomnia.[8]

PI has been considered an evidence-based treatment by AASM since the 1990s, although PI was not recommended as a single-component treatment in their 2021 clinical practice guidelines for behavioral and psychological treatments for insomnia.[17] It is worth mentioning that the 2021 guidelines were based on a systematic review of 5 trials, and a meta-analysis including 2 trials. However, the previous narrative review of cognitive interventions for insomnia found empirical support for PI,[18] and so did the systematic review and meta-analysis that included 10 trials on PI.[19] In summary, PI can still be considered as an evidence-based treatment that has the potential to reduce sleep onset latency and the number of awakenings. The scientific support for PI refers to PI delivered as a single component treatment. PI has also been included as a cognitive technique in CBT-I, but what PI may add to the outcome results has not been investigated.

Although CBT-I is the treatment of choice, there are issues with a proportion of patients who do not benefit from the treatment, CBT-I might not be suitable for all, and availability varies greatly. It may thus be relevant for clinicians to consider PI as an adjunct intervention for insomnia or as a

second-line treatment. The consideration should be based on clinical knowledge and experiences; the circumstances of each patient, including the patient's needs, resources, and preferences; as well as available treatment options. As a treatment, PI should be relatively easy for clinicians to learn, and to deliver in various clinical settings.

According to potential mechanisms of change in PI, it is reasonable to assume that PI may be particularly relevant (as an adjunct- or second-line treatment) for patients with sleep-related performance anxiety and/or sleep-onset insomnia, and that PI will be more successful in patients who have a significant sleep drive because of prolonged wakefulness before going to bed. Moreover, PI may be helpful in reducing sleep-disturbing behaviors in bed and serve as a moment to be aware of anxiety-provoking thoughts.

PI instructions may overlap with those of other CBT-I techniques, which support the use of PI as a second-line intervention. PI may also be contradictory to other CBT-I techniques, which may make it difficult to implement PI as an adjunct intervention in CBT-I. One example is stimulus control, in which the instructions to not engage in sleep-disturbing behaviors is in line with the PI instructions. However, the instructions to get out of bed when unable to fall asleep contrasts with the PI instructions to lie awake in bed as long as possible. Another example is sleep restriction. Sleep restriction means less hours in bed, which aims to reduce wakefulness in bed. There are thus limited opportunities to lie awake for any longer time. On the other hand, sleep restriction will create a significant sleep drive, which may help the patient to fall asleep quickly when using PI, which in turn may help reducing sleep performance anxiety, the main goal of PI.

If PI will be delivered as a second-line, standalone treatment, it is currently not possible to recommend a certain dose, but most PI interventions have included 2 to 4 sessions. Negative side effects of PI have not been fully explored, but a side effect to be aware of is, like in other psychological interventions, increased anxiety in the beginning of treatment.

## FUTURE RESEARCH

During the writing process of this article, we identified several areas for future research, both on PI as an adjunct treatment of insomnia and as a second-line treatment of insomnia. Most of the previous studies were conducted in the eighties, and we have since seen changes in diagnostic criteria, research methodology, and lifestyle habits (eg, electronic devices).

One area for future research is evaluations of PI in different populations, with a special focus on populations in which CBT-I may be unsuitable, for example, older and frail persons, pregnant women, shift workers, long-distance drivers, patients with bipolar disorder, and patients who do not improve by CBT-I. Moreover, future studies are needed to determine which patients are best suited for PI, for example, patients with sleep-onset insomnia versus sleep-maintenance insomnia. Other areas for future research are to investigate moderators and theory-based mechanisms of change, and the role of PI as an adjunct treatment of insomnia. Moreover, studies on the effects of PI on daytime symptoms and functioning, side effects of PI, and adherence are missing, and so are long-term follow-ups and cost-effectiveness analyses of PI. Inductive explorations of patients' experience of PI are an additional area of research when qualitative studies have the potential to catch experiences that are difficult to catch in by questionnaires and statistical analyses.

## CLINICS CARE POINTS

- PI is one of several treatment components that clinicians might consider using as an adjunct intervention to CBT-I.
- As an adjunct intervention, PI could be used after the implementation of CBT-I or concurrently with CBT-I.
- In some cases, PI might be preferred over CBT-I, due to a patient's clinical presentation or the brief nature of PI.

## DISCLOSURE

M. Jansson-Fröjmark, C. Sandlund, and A. Norell-Clarke have nothing to disclose.

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