



DOSSIER · THERAPY

Art Therapy

This page classifies the research on art therapy. Noticeable is the imbalance: The largest part of the evaluated studies is observational or basic research oriented, controlled studies on humans form the smaller group. Most densely investigated are cognitive endpoints, fatigue and oncology.

762

STUDIES IN
TOTAL

443

IN HUMANS

114

OF WHICH
CONTROLLED

12

IN ANIMALS

0

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-15

How to Read This Dossier

ESTABLISHED

measured in humans, with a
comparison group

PLAUSIBLE

supported by mechanism, animal
studies or observation

HYPOTHESIS

a likely connection that still needs to
be tested

Art Therapy at a Glance

ORIGIN:
Art therapy is a therapeutic procedure in which artistic creation — painting, drawing, mandala work, calligraphy — is used as a treatment path, individually, in groups and also in virtual reality or AI-supported. The evaluated research mainly comprises observational studies; controlled studies in humans form the smaller group. The most densely investigated are cognitive endpoints, fatigue and oncology.

EVIDENCE BASE:
762 evaluated studies · 114 controlled studies in humans · 329 observational studies · 80 review articles · 12 animal studies · 0 cell culture studies

- STRONGEST EVIDENCE:**
- Cognition (MCI): A randomised controlled study in 127 older adults improved global cognition (SMD = 0.75) and depressiveness (SMD = -0.93) [2].
 - Anxiety in children and adolescents: A meta-analysis of six studies with 422 participants reports a marked reduction in anxiety symptoms (SMD = -1.42) with pronounced heterogeneity ($I^2 = 94\%$) [10].
 - Dementia: A network meta-analysis of various procedures from 39 randomised controlled studies with 2801 participants found better cognitive function under calligraphy therapy [17].
 - Oncology: In 320 patients with localised breast cancer during radiotherapy, one month later 45 % of the art therapy group and 57 % of the standard group reported severe global fatigue [6].
 - Stroke: A randomised controlled study in 40 patients showed greater improvement in daily independence and a stronger reduction in spasticity after 12 sessions of virtual art therapy [14].

- LIMITATIONS:**
- The heterogeneity of the anxiety meta-analysis is pronounced ($I^2 = 94\%$); which age groups and settings carry the effect remains open in the evaluation [10].
 - In cancer, the improvement in overall quality of life was not accompanied by the subscales of mental and physical health; which session components explain this remains open [11].
 - In the fatigue review among healthcare workers, format, scope and instruments of the 27 studies from 13 countries do not permit a pooled effect estimate [4].

CLASSIFICATION:
Art therapy is a therapeutic procedure whose research on cognition, fatigue and oncology is densest, while controlled studies in humans form the smaller group.

1. What Art Therapy Is

Art therapy is a procedure in which patients, under the guidance of a trained therapist, paint, draw or shape with materials; the resulting work is not evaluated but used as an occasion for expression and conversation. The available studies distinguish several forms: work with visual media (visual art therapy), structured mandala drawing, art-psychotherapeutic work with children and adolescents, and variants that incorporate digital tools, such as virtual-reality settings in stroke rehabilitation or programmes that work with artificial intelligence. It is delivered as an individual or group setting, as a standalone treatment or as an adjunct to ongoing therapy, for example in addition to antidepressant medication.

One point is crucial for understanding all studies: under the label art therapy, very different treatments are grouped together. They differ in medium, structure, number of sessions, duration, group size and setting. The control arms of the controlled studies are also not uniform; comparisons are made against waiting list, against standard care or against another active offer. In addition, the recorded endpoints vary widely: cognitive test performance, fatigue, anxiety, depressive symptoms and quality of life stand alongside individual physiological measures. **Plausible:** A pooled effect size therefore describes a family of procedures, not a single technique. Anyone who wants to know what works must read the medium and setting as well. Blinding of participants is hardly possible with a creative procedure, so the controlled studies are correspondingly single-blind or open-label.

2. What the Studies Show in Detail

The key human studies and the most important reviews — by application area, with population, duration, procedure, measure and result as reported in the original studies. Numbers appear only where the study states them.

Distribution of **controlled studies in humans** by application area — the numbers are not additive, as one study may be assigned to several areas:

APPLICATION AREA	CONTROLLED STUDIES
Cognition and psyche	85
Fatigue and stress	33
Oncology	16
Musculoskeletal system	15

APPLICATION AREA	CONTROLLED STUDIES
Safety and tolerability	11
Gut and microbiome	3
Immune system	2
Heart and circulation	2

Cognition and Psyche

The most robust single examination of visual art therapy in mild cognitive impairment (MCI) is a single-blind randomised controlled study in 127 older adults with a mean age of 73.6 years and a median duration of education of 0 years (range 0–9) [2]. The intervention group received 12 sessions of visual art therapy over 6 weeks, the control group 6 sessions of health education. Global cognition, depression, psychological well-being and instrumental activities of daily living were measured at baseline, immediately after the intervention and at 3 and 6 months. Immediately after the intervention the intervention group improved more in global cognition ($\beta = 2.56$; 95 % CI 1.16–3.97; $p < .001$; SMD = 0.75) and in depressiveness ($\beta = -2.01$; 95 % CI -3.09 to -0.93; $p < .001$; SMD = -0.93), and the cognitive effects persisted at 3 and 6 months. No difference from health education was detectable for psychological well-being and daily functioning [2]. It remains open whether the restriction to people with no or very little schooling conditions the effect or merely makes it easier to detect.

A systematic review of visual art therapy in people over 60 with MCI screened 4311 studies and included seven: five reported an improvement in cognition, two of them sustained over 6 to 9 months, three only immediately after the intervention. Four of six studies on psychological well-being reported a positive effect, and methodological quality was in the medium range in four of five randomised controlled studies [7]. The meta-analysis on art therapy and depressive symptoms in older adults searched the databases up to 15 February 2022, identified 222 studies via databases and 199 via reference lists and included eight studies in the evaluation; mean depression scores were significantly lower in the intervention groups than in the control groups [8]. Neither work states whether sessions conducted individually or in groups differ in effect.

A systematic review of mandala art identified eleven studies with 405 participants and found preliminary indications that negative symptoms improve, hope strengthens, pain decreases and some physiological stress indicators decline; the quality of the available evidence limited the generalisation of the results [5]. Regarding anxiety in children and adolescents, a meta-analysis includes six studies with 422 participants and reports a marked reduction in anxiety symptoms (SMD = -1.42; 95 % CI -2.33 to -0.51; $p < 0.002$) with pronounced heterogeneity ($\text{Tau}^2 = 1.41$; $\text{Chi}^2 = 101.19$; $\text{df} = 6$; $I^2 = 94\%$; $Z = 3.06$) [10]. Which age groups and which settings carry the effect remains open in the evaluation.

The additionally treated group improved somewhat more; the authors themselves consider a stricter test necessary [13]. The network meta-analysis on various non-pharmacological procedures in dementia comprises 39 randomised controlled trials with 2801 participants: calligraphy therapy (MD = 4.39) and reminiscence therapy (MD = 2.53) improved cognitive function compared with usual care, reminiscence therapy additionally compared with music therapy (MD = 1.75), and garden therapy reduced agitation [17]. In a randomised controlled trial with 60 older people with MCI, allocated to an AI group, a VR group and a control group, both intervention groups achieved higher values for cognitive function and mental health; the AI group improved in boredom ($p < .001$; $\eta^2 = .093$), activity reduction ($p = .001$; $\eta^2 = .082$), life worth ($p = .003$; $\eta^2 = .092$) and happiness ($p = .001$; $\eta^2 = .093$), the VR group in attention ($p = .006$; $\eta^2 = .130$), expression ($p = .002$; $\eta^2 = .139$), orientation ($p = .01$) and memory ($p = .02$) [9]. Whether these effects are attributable to the artistic activity or to the respective medium was not examined separately.

Exhaustion and Stress

A systematic review on exhaustion in healthcare workers searched six databases (PubMed, PsycINFO, MEDLINE, EMBASE, CINAHL, ProQuest Central), Google Scholar and three study registers for art-therapeutic procedures targeting burnout risk or psychosocial stress. Twenty-seven studies from 13 countries were included, appraised with the Joanna Briggs Institute critical-appraisal tools, and quantitatively and qualitatively collected results were narratively synthesised. The studies differ in format, scope and assessment instruments, so the review organises the reported procedures and their evaluation rather than forming a common effect estimate [4]. What remains to be clarified is which session density is sustainable in this occupational group and whether stress values still differ after months.

For children and adolescents in psychiatric services, a systematic review examined 17 studies, ten on the treatment of children with a psychiatric diagnosis and seven on children with symptoms without a formal diagnosis. The studies varied in the type of art therapy or art psychotherapy, the underlying condition and the endpoints; many were case studies or case series or small quasi-experimental studies, randomised controlled trials were rare, and replication studies were not found. Some indications speak for a benefit in children after trauma or with PTSD symptoms [32]. Which age groups and which forms of trauma benefit most from which implementation remains open.

For PTSD, a conceptual paper presents a narrative synthesis of neurophysiological assumptions of effect and names as active components of art therapy concretisation and metaphor, active artistic activity, emotion processing and regulation, perspective change and reframing as well as the therapeutic relationship; the classification is made via the Triple-Network Model [34]. Both papers describe pathways of effect, not evidence of effect; what remains to be clarified is whether these regulatory processes can be measured with instruments that also capture the symptomatology.

HYPOTHESIS The regulatory processes described in forensic settings – perceptual attention (interoceptive and exteroceptive), regulation of emotions, stress and impulses, social regulation and self-expression [35] – could explain why art-therapeutic offers are taken up by occupationally stressed healthcare workers [4], although the 27 studies from 13 countries evaluated there do not form a common effect estimate. This would be testable via measures of stress regulation before and after a series of sessions and via the question whether the courses differ between occupational groups.

Oncology

In 320 patients with localised breast cancer during radiotherapy, a non-blinded study randomised an art-therapy group with eight weekly sessions, beginning during radiotherapy, against a standard group. The primary endpoint was severe global fatigue (subscale of the Functional Assessment of Chronic Therapy Fatigue, score < 37) one month after radiotherapy; additionally, quality of life (Fact-B), anxiety and depression (Hospital Anxiety and Depression Scale) and dimensions of fatigue (20-Item Multidimensional Fatigue Inventory) were assessed after 1, 6 and 12 months. 82 % of the patients completed at least eight sessions. Severe initial fatigue was present in 43 % of the patients in both groups and in 64 % of those whose protocol included chemotherapy; one month after radiotherapy, 45 % of the art-therapy group and 57 % of the standard group reported severe global fatigue [6]. Whether the difference also holds after 6 and 12 months remains open.

A meta-analysis on art therapy in adults with cancer included eight randomised controlled trials from four countries. Art therapy improved overall quality of life but had no significant effect on the subscales mental health and physical health in women with cancer; anxiety was alleviated [11]. Thus the direction is reported for the overall scale, while the subscales do not follow in this evaluation. What remains to be clarified is which components of the sessions – active creation, conversation, reference to a work – explain the difference between overall scale and subscales.

In 60 operated breast-cancer patients, 30 in the intervention group and 30 in the control group, an experimental study examined an offer of marbling art, guided by an art specialist and accompanied by new music, delivered over 10 weeks in five sessions at two-week intervals during chemotherapy; the control group received no intervention. Pain intensity (Visual Analogue Scale), nausea, vomiting and retching (Rhodes Index), anxiety (Beck Anxiety Inventory) and quality of life (Functional Assessment of Cancer Therapy Scale-General) were assessed. In the intervention group, pain, nausea and vomiting as well as anxiety decreased, and quality of life increased [15]. A mapping review on advanced cancer stage III and IV found 14 studies; only one was a randomised controlled trial, interventions and endpoints were heterogeneous, and the reported benefits included improved emotional and spiritual state, symptom relief, perceived well-being, satisfaction and helpfulness [16]. For this group the question remains open which endpoints can sensibly be repeated in late disease phases.

Further Investigations

The broadest evaluation is a systematic review with meta-analysis on active visual art therapy in all patient groups. Searches were conducted in Cochrane Library, Embase, MEDLINE, CINAHL, ERIC, PsycArticles, PsycInfo, PSYINDEX, the German Clinical Trials Register and ClinicalTrials.gov, without language filter and for all data before March 2021; included were randomised clinical trials of any patient group against a control without active visual art therapy. Evaluation took place from 24 April to 8 September 2023 with narrative summaries, Forest Plots and random-effects meta-analyses; study quality was assessed with the Cochrane Risk-of-Bias tool [1]. The associated protocol names psychological, cognitive, somatic and economic endpoints and states that, depending on the number, quality and heterogeneity of the studies, a meta-analysis is possible or a purely narrative summary is produced [18]. A PubMed search identified 413 papers and describes art therapy with painting and drawing as an adjunctive procedure with positive results in depression, anxiety, cognitive impairment, dementias, Alzheimer's disease, schizophrenia and autism [25]; a further review reports improved mental health when art therapy is used as an add-on treatment [27].

Two papers examine art therapy in virtual reality in stroke rehabilitation. A single-blind randomised controlled trial in 40 patients compared conventional therapy with a protocol in which upper-arm physiotherapy was replaced by art therapy in virtual reality that utilises the so-called Michelangelo effect. After 12 sessions the virtual art-therapy group showed greater improvement in independence in daily living (Barthel Index, interaction of time and group: $p = 0.001$), upper-arm muscle strength (Manual Muscle Test, $p < 0.01$) and a stronger reduction in spasticity (Ashworth Scale, $p = 0.007$) [14]. An earlier study compared ten patients in the subacute phase after stroke who trained for one month with virtual art therapy and physiotherapy with ten patients matched for disease duration, age and clinical parameters under conventional therapy: the Barthel Index improved by 66 ± 33 % versus 31 ± 28 % ($p = 0.021$), pinch strength by 66 ± 39 % versus 18 ± 33 % [30].

An evidence-based review on integrative therapies in Parkinson's classifies art therapy as a procedure that improves visual-spatial abilities, while music and dance therapy can alleviate freezing of gait; the basis is several recent randomised controlled trials on movement, nutrition, sleep, social contact and body-oriented procedures [3]. A systematic review on AI-supported art therapies evaluated 15 papers from PubMed, Cochrane Library, Web of Science and CNKI according to PRISMA, assessed methodological quality with the JBI criteria and extracted data in PICO(S) format with a focus on randomised controlled trials; it concludes that AI-supported formats – robots, AI painting and AI chatbots – can expand the therapeutic experience through new avenues of expression, and at the same time emphasises ethical questions and responsible use [12]. Whether the visual-spatial effects in Parkinson's stem from the art therapy itself or from the accompanying activation is not separated in the evaluated papers.

For palliative care, a practice-oriented paper describes training and expertise of music and art therapists, therapeutic approaches in the interprofessional team as well as the evidence for symptom control that supports the use of both procedures in training and further education and clinical employment [28]. A scoping review on creative therapies in healthy older people evaluated 12 articles from three databases and assigned the findings to four themes: cognitive performance and proprioception, self-identity and meaningful life, reduction of loneliness and depressive symptoms, and socialisation [33]. A systematic review on community-based art groups found nine studies from the years 2000 to 2019 in five databases, predominantly qualitative, with visual arts, guided by artists and accompanied by psychiatric nurses; the few quantitative results showed increased well-being, the qualitative results corresponded predominantly to the recovery process of connectedness in the CHIME framework, supplemented by safety of the setting, self-expression, competence development and the effect of concluding exhibitions and peer leadership. The review recommends prospective mixed-methods designs with larger, gender-sensitive samples, control groups, follow-ups and cost-effectiveness analyses [36]. What remains open is how connectedness in these settings can be captured in a controlled manner.

Safety and Tolerability

Regarding neurobiological mechanisms, a systematic review according to Cochrane and PRISMA standards evaluated papers on active and passive participation in creative arts and examined the role of the medial prefrontal cortex and the amygdala in emotion regulation and creative behaviour. The review provides preliminary indications of possible shared neural mechanisms of both phenomena and suggests deriving targeted art-based interventions for emotion regulation from them [31]. Whether these mechanisms present differently in patient groups with pronounced dysregulation is not answered in the evaluated papers.

Adverse effects are not a reported endpoint in the evaluated papers. Closest to this is treatment fidelity: in the breast-cancer study with eight weekly sessions, 82 % of the patients completed at least eight sessions [6]. The mapping review on advanced cancer lists satisfaction and helpfulness explicitly among the reported benefits [16], without naming adverse events. For practice, the question therefore remains open whether and how tolerability will be systematically recorded in future – for example as reasons for discontinuation, as burden during a session or as after-effects with distressing topics.

Overall Picture

3. How Robust the Research Is

The distribution is clear. Observational studies in humans form the largest group; controlled studies in humans remain a smaller group, the mechanism reviews a separate, well-populated block. Animal studies are a marginal group. Within the controlled studies, **cognition** clearly predominates over **exhaustion**, **oncology**, **musculoskeletal system** and **safety**. Gastrointestinal tract, immune system, cardiovascular system, inflammation and metabolism are represented by only individual papers. Summary evaluations exist for active visual art therapy and health endpoints, for depressive symptoms in older adults, for anxiety in children and adolescents, for quality of life and psychosomatic complaints in adults with cancer, and for mandala work.

Methodologically the field is divided in two. On one side stand several meta-analyses and systematic reviews that pool controlled clinical trials; they carry the most robust statements. On the other side, individual studies predominate, whose samples, media and comparison conditions diverge, so that results can be placed side by side only to a limited extent. **Plausible:** The most frequently cited entries in the field come predominantly from review and observational papers; attention therefore does not follow methodological rigour. The mechanism literature proposes neurophysiological pathways, for example for post-traumatic stress disorder and for the effect of creative activity on mental and physical health; one paper in the field deals explicitly with the relationship between evidence and myths. Such models remain framework proposals; the effect in humans has not been investigated.

The collective term is too broad for a common statement

Whoever summarises the study situation summarises different things. Visual work, mandala drawing, art psychotherapy in children, virtual-reality exercises in rehabilitation and programmes with artificial intelligence appear under the same heading and enter the same review papers. A summary effect across such papers states that something in this group changed something in someone. For the practical question of which medium helps which patient in which setting, it contributes little.

HYPOTHESIS:

The breadth of the field is at once its strength and the reason why its results are so difficult to grasp.

Citation counts are not an evidence scale either. Among the most cited works are reviews and individual entries that touch on art therapy questions only marginally; they contribute nothing to the matter. Conversely, for entire application areas there are only individual controlled studies, for example on the gut, immune system and metabolism. There the research is at the beginning, and the open question is not decided, but unexamined. Whoever concludes efficacy from the citation situation confuses familiarity with examination.

4. What Is Frequently Claimed — and What the Data Provide

STATEMENT	STUDY SITUATION
Art therapy works against depression	For older adults, there is a meta-analysis of controlled clinical studies on depressive symptoms, as well as a randomised study on supplementing ongoing antidep
Art therapy improves cognition in mild cognitive impairment	Several systematic reviews and controlled studies examine people with mild cognitive impairment, partly with a low level of education. What is recorded is the te
Art therapy works via the immune system or the gut	In diesen Gebieten liegen nur einzelne kontrollierte Arbeiten vor. Die Forschung steht hier am Anfang; belastbare Aussagen lassen sich daraus nicht ableiten.
Art therapy prolongs life in oncology	The oncological studies investigate fatigue, quality of life and psychosomatic complaints. Survival is not an assessed endpoint in these studies.

5. The Most Robust Works

Ordered by evidential strength, not by familiarity. The complete evaluation comprises significantly more works; here are the most robust ones.

Controlled Studies in Humans

- ¹ Active Visual Art Therapy and Health Outcomes: A Systematic Review and Meta-Analysis (2024)
- ² Visual Art Therapy and Cognition: Effects on People With Mild Cognitive Impairment and Low Education Level (2022)
- ³ Updates in Parkinson's Disease Integrative Therapies: an Evidence-Based Review (2023)
- ⁴ Art therapy-based interventions to address burnout and psychosocial distress in healthcare workers—a systematic review (2023)
- ⁵ Does Mandala Art Improve Psychological Well-Being in Patients? A Systematic Review (2024)
- ⁶ Impact of creative art therapy on fatigue and quality of life in patients treated for localized breast cancer: A randomized study (2022)
- ⁷ Visual art therapy and its effects in older people with mild cognitive impairment: A systematic review (2024)
- ⁸ The Effect of the Art Therapy Interventions on Depression Symptoms Among Older Adults: A Meta-analysis of Controlled Clinical Trials (2023)
- ⁹ Effects of artificial intelligence and virtual reality interventions in art therapy among older people with mild cognitive impairment (2025)
- ¹⁰ The effects of art therapy interventions on anxiety in children and adolescents: A meta-analysis (2024)
- ¹¹ The effects of art therapy on quality of life and psychosomatic symptoms in adults with cancer: a systematic review and meta-analysis (2023)
- ¹² Emergence of Artificial Intelligence Art Therapies (AIATs) in Mental Health Care: A Systematic Review (2024)
- ¹³ The Effects of Adding Art Therapy to Ongoing Antidepressant Treatment in Moderate-to-Severe Major Depressive Disorder: A Randomized Controlled Study (2022)
- ¹⁴ Efficacy of a Virtual Reality Rehabilitation Protocol Based on Art Therapy in Patients with Stroke: A Single-Blind Randomized Controlled Trial (2024)
- ¹⁵ The Effect of Art Therapy on Pain, Emesis, Anxiety, and Quality of Life in Operated Breast Cancer Patients: Randomized Control Trials (2024)
- ¹⁶ Art Therapy in Advanced Cancer. A Mapping Review of the Evidence (2022)
- ¹⁷ Comparative efficacy of various art therapies for patients with dementia: A network meta-analysis of randomized controlled trials (2023)
- ¹⁸ The effect of active visual art therapy on health outcomes: protocol of a systematic review of randomised controlled trials (2022)
- ¹⁹ Effects of a nurse-led staged integral art-based cognitive intervention for older adults on the Alzheimer's disease spectrum: A randomized controlled ... (2024)
- Coping, Emotional Processing, and Cancer-Related Symptoms in Breast Cancer Survivors: Cross-Sectional Secondary Analysis of the REPAT Study (2025)
- ²⁰ Art-based interventions for women's mental health in pregnancy and postpartum: A meta-analysis of randomised controlled trials (2023)
- ²¹ The role of art therapy on quality of life of women with recent pregnancy loss: A randomized clinical trial (2024)
- ²² Clinical study of dance art therapy on hospitalized patients with chronic schizophrenia (2024)
- ²³ A scoping review of the use of creative activities in stroke rehabilitation (2024)

PROVEN The most robust statements in the field come from meta-analyses and systematic reviews that pool controlled clinical studies. For older adults, a meta-analysis of controlled clinical studies on depressive symptoms is available, supplemented by a randomised study on art therapy as an adjunct to ongoing antidepressant treatment. For children and adolescents, a meta-analysis summarises controlled studies on anxiety. For adults with cancer, a meta-analysis pools quality of life and psychosomatic complaints. Further reviews concern active visual art therapy and health endpoints as well as mandala work. These statements apply respectively to the groups studied, not to the procedure as a whole.

PLAUSIBLE Under the label art therapy, very different treatments are grouped together that differ in medium, structure, number of sessions, duration, group size and setting; the comparison arms also diverge. A pooled effect size therefore describes a family of procedures, not a single technique. Citation counts are also not an evidence scale: among the most cited works are reviews and entries that touch on art-therapeutic questions only marginally, while for entire fields of application only individual controlled studies are available.

The first point to clarify would be the dose: which number of sessions, duration and group size are effective and from which intensity onwards the result differs from a waiting list. It is also open which control is appropriate when a creative procedure cannot be blinded — routine care, another creative offer or an attention control. Finally, it has not been examined whether the improvement in cognitive test performance in mild cognitive impairment translates into a changed disease course. The mechanism literature suggests neurophysiological pathways, for example for post-traumatic stress disorder; such models remain framework proposals; the effect in humans has not been investigated.

6. Summary

A randomised controlled study in 127 older adults with mild cognitive impairment showed better global cognition (SMD = 0.75) and lower depressivity (SMD = -0.93) after visual art therapy, sustained over 3 and 6 months [2]. In oncology, one month after radiotherapy, 45 % of the art therapy group and 57 % of the standard group reported severe global fatigue [6].

PLAUSIBLE According to the described mechanisms of action, art therapy works via concretisation and metaphor, active artistic activity, emotional processing and regulation, perspective change and the therapeutic relationship, classified via the Triple-Network Model; this work describes pathways of action, not evidence of efficacy [34]. **Hypothesis:** The regulatory processes described in forensics — perceptual attention, regulation of emotions, stress and impulses, social regulation and self-expression [35] — could explain why art-therapeutic offers are taken up by occupationally burdened healthcare employees [4].

What needs to be clarified is which session density is sustainable in burdened occupational groups and whether stress values still differ after months [4], and whether the fatigue difference in oncology also holds after 6 and 12 months [6]. It is also open whether the restriction to people with no or very little schooling determines the cognitive effect in MCI or merely makes it easier to demonstrate [2], which session components explain the difference between overall quality of life and subscales in cancer [11] and whether the visuo-spatial effects in Parkinson's stem from the art therapy itself or from the accompanying activation [3]. For community-based art groups, the review recommends prospective mixed-methods designs with larger, gender-sensitive samples, control groups, follow-ups and cost-effectiveness analyses [36].

7. What Remains Open

- **Dose:** Which number of sessions, duration and group size are effective, and from which intensity onwards does the result differ from a waiting list?
- **Comparison arm:** Which control is appropriate when a creative procedure cannot be blinded — routine care, another creative offer or an attention control?
- **Course:** Does the improvement in cognitive test performance in mild cognitive impairment translate into a changed disease course?

Frequently Asked Questions

Which application areas of art therapy are best investigated?

Cognitive endpoints are investigated most densely, followed at a clear distance by fatigue, oncology, the musculoskeletal system and safety. Controlled studies and, in some cases, summary evaluations are available for these areas. Areas such as the gut, immune system, cardiovascular system or metabolism, by contrast, are represented by only individual studies.

How do I evaluate studies in which art therapy was tested in addition to medication?

In such studies art therapy is added to an existing treatment. The result therefore measures the contribution of the procedure in this combination, not the effect of art therapy alone. For practice this is the more realistic question; for attributing an effect to the procedure it is the weaker one.

Are virtual-reality and AI-supported variants the same procedure?

The studies treat them as variants of the same field, with different media and different settings, and examine them in their own controlled studies, for example in stroke rehabilitation. **Plausible:** Whether an exercise delivered via virtual reality uses the same mechanisms of action as working with materials is therefore not clarified. The accompanying reviews on this branch are still at an early stage.

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Research, put in context. Every statement leads to the original paper; the decision in the individual case rests with the treating professional.
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