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Intermittent Hypoxia-Hyperoxia Therapy

The **intermittent hypoxia-hyperoxia therapy (IHHT)** is a novel, non-invasive procedure that uses targeted alternation between oxygen-poor and oxygen-rich air. Research is still in its early stages, but controlled studies already exist on metabolism, the cardiovascular system, and cognition. The most intriguing finding: most studies do not evaluate the therapy in isolation but in combination with exercise or rehabilitation, making it difficult to isolate its specific effects.

16

STUDIES IN
TOTAL

15

IN HUMANS

9

OF WHICH
CONTROLLED

1

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

Intermittent Hypoxia-Hyperoxia Therapy at a Glance

ORIGIN:
Intermittent hypoxia-hyperoxia therapy (IHHT) is a non-invasive physiological conditioning method that uses targeted alternation between oxygen-poor (hypoxic) and oxygen-rich (hyperoxic) air. Developed from high-altitude medicine and adaptive training research in the 1990s, IHHT extends the principle of intermittent hypoxia by incorporating hyperoxic phases to balance oxidative stress and accelerate regeneration. It is administered in controlled settings using standardised protocols for duration, cycle count, and oxygen concentrations.

STUDY LANDSCAPE:
16 evaluated studies · 9 controlled human studies · 6 observational studies · 0 review articles · 1 animal study · 0 cell culture studies

- STRONGEST EVIDENCE:**
- **Metabolism:** In obese patients, IHHT combined with exercise therapy showed improvements in physical endurance (6MWT), lung function (Tiffeneau index), and kidney and liver parameters (uric acid, creatinine, AST, ALT) after 3–4 weeks. The effects suggest metabolic and respiratory adaptations, though the combined intervention limits conclusions about IHHT’s isolated contribution. Long-term data are lacking.
 - **Cardiovascular** In Long COVID patients, IHHT combined with rehabilitation increased walking distance in the 6MWT compared to standard rehabilitation alone. Secondary endpoints such as dyspnoea and fatigue showed trends towards improvement without statistical significance.
 - **Cognition and Psychology** In geriatric patients, IHHT combined with multimodal training improved cognitive parameters, particularly in tests such as the *DemTect* and *Clock Drawing Test*. Walking distance in the 6MWT increased by 24.1 % vs. 10.8 % in the control group.
 - **Inflammation** In patients with metabolic syndrome, IHHT combined with other interventions reduced total cholesterol, LDL, triglycerides, and inflammatory markers such as hs-CRP and galectin-3 after 3 weeks. The control group showed no changes.
 - **Safety and Tolerability** In patients with coronary heart disease before bypass surgery, IHHT combined with preoperative care reduced postoperative troponin-I and lactate levels without serious adverse events. Meta-analyses confirm safety in musculoskeletal dysfunctions when used alongside standard therapies.

- LIMITATIONS:**
- None of the controlled studies examine IHHT in isolation—it is almost always combined with exercise therapy or rehabilitation, complicating the attribution of effects.
 - The studies are methodologically heterogeneous, often lacking placebo controls (e.g., normoxic air instead of hyperoxia) and featuring small, selected samples (e.g., older patients with comorbidities).
 - Whether laboratory parameters such as inflammatory markers or lipid profiles translate into patient-relevant outcomes remains unclear. Preclinical data exist but are not directly transferable to humans, and their relevance to clinical outcomes has not been investigated.

ASSESSMENT:
Intermittent hypoxia-hyperoxia therapy (IHHT) is a promising method with observed effects on cognition, metabolism, and the cardiovascular system when combined with standard therapies. Its safety profile is confirmed in these settings. However, the isolated effects of IHHT and its long-term benefits require further investigation through controlled studies examining IHHT alone.

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1. What Intermittent Hypoxia-Hyperoxia Therapy Is

The **intermittent hypoxia-hyperoxia therapy (IHHT)** is a physiological conditioning method in which patients receive alternating oxygen-reduced (hypoxic) and oxygen-enriched (hyperoxic) air via a breathing mask. The method originates from high-altitude medicine and adaptive training research, where intermittent hypoxia has been used to enhance performance since the 1990s. IHHT extends this principle by adding hyperoxic phases to balance oxidative stress and promote regeneration. The therapy is administered in controlled settings, usually under medical supervision, using standardised protocols for duration, cycle count, and oxygen concentrations.

The key difference from other oxygen therapies lies in the **alternation of oxygen partial pressures**. While continuous hypoxia or hyperoxia each trigger specific adaptation responses, IHHT aims to combine both mechanisms through rapid switching: hypoxia activates cellular stress responses (e.g., HIF-1α signalling pathway), while hyperoxia enhances mitochondrial efficiency and antioxidant capacity. Most studies use cycles of 3–5 minutes of hypoxia (10–14 % O₂) followed by 2–3 minutes of hyperoxia (30–40 % O₂), over 30–60 minutes per session. However, the precise calibration of these parameters remains non-standardised and varies between studies.

2. What the Studies Show in Detail

The key human studies and major reviews—grouped by application area, with population, duration, preparation, measurement parameters, and outcomes as reported in the original studies. Numbers are included only where the study provides them.

Distribution of **controlled human studies** by application area—the numbers are not additive, as a single study may be assigned to multiple areas:

APPLICATION AREA	CONTROLLED STUDIES
Metabolism	4

APPLICATION AREA	CONTROLLED STUDIES
Musculoskeletal system	4
Cardiovascular	4
Cognition and Psychology	3
Safety and Tolerability	3
Fatigue and Stress	2
Skin	1
Oxidative Stress	1

Cognition and Psychology

Walking distance in the *6-Minute Walk Test* (6MWT) also increased by 24.1 % in the IHHT group vs. 10.8 % ($P = 0.021$). The therapy was well tolerated up to the age of 92 and described as easy to apply.

The combined IHHT and multimodal training group (4–7 minutes at 10–14 % O_2 , followed by 2–4 minutes at 30–40 % O_2) for 5–7 weeks showed no significant differences in the *Tinetti Mobility Test*, *Timed-Up-and-Go Test*, or *Barthel Index* compared to the control group breathing room air. The study suggests a possible synergistic effect of the combined intervention—particularly for cognitive parameters⁴. The lack of significance in mobility tests may be due to the small sample size or short intervention duration.

PLAUSIBLE Preclinical data in mice suggest that intermittent hypobaric hypoxia (a related but distinct protocol) may upregulate *Hypoxia-Inducible Factor 1 α* (HIF-1 α) expression in the *Dorsal Raphe Nucleus* (DRN), with effects persisting for up to three months post-treatment. The study also identified the *P2X2 receptor* as a downstream target of HIF-1 α , whose activation was critical for the antidepressant-like response. These findings are preliminary, as the mechanisms have not been investigated in humans, and antidepressant effects remain untested in clinical settings¹².

HYPOTHESIS The observed cognitive improvements may result from neuroplastic adaptations driven by hypoxia-induced HIF-1 α stabilisation, which promotes the expression of neuroprotective factors such as *Brain-Derived Neurotrophic Factor* (BDNF). Direct evidence for these mechanisms in human studies is currently lacking. Future research should investigate whether IHHT produces similar effects in younger patients with mild cognitive impairment (MCI) and whether combining IHHT with cognitive training enhances outcomes.

Metabolism

The intervention group ($n = 27$) showed improvements in surrogate markers, including reduced fasting glucose, enhanced left ventricular ejection fraction, and lower systolic and diastolic blood pressure values after treatment and at the 1-month follow-up. Additionally, the frequency of angina pectoris as a reason for terminating exercise tests decreased¹.

Evidence: In a randomised controlled trial involving 70 obese patients (intervention group: $n = 35$, control group: $n = 35$), IHHT improved physical exercise capacity (6MWT: $p < 0.001$) and lung function (Tiffeneau index: $p < 0.001$) after 3–4 weeks. Significant improvements were also observed in kidney function (uric acid: $p = 0.047$; creatinine: $p = 0.006$) and liver parameters (AST: $p = 0.001$; ALT: $p = 0.030$)⁷. While the study suggests that IHHT promotes metabolic and respiratory adaptations in obesity, long-term data on the sustainability of these effects are lacking.

HYPOTHESIS The metabolic improvements may stem from enhanced mitochondrial efficiency and activation of hypoxia-sensitive signalling pathways (e.g., HIF-1 α), which increase glucose uptake in peripheral tissues. It remains unclear whether these effects are dose-dependent or whether specific patient groups (e.g., those with insulin resistance) benefit more. Future research should examine whether combining IHHT with metabolic nutrition therapy yields additive effects.

Cardiovascular System

The groups did not differ significantly in peak oxygen uptake after the intervention (IHHT: 19.9 ± 6.1 vs. control: 20.6 ± 4.9 $mlO_2 \cdot min^{-1} \cdot kg^{-1}$), suggesting comparable cardiorespiratory fitness outcomes between IHHT and conventional training².

Evidence: In a controlled pilot study of *Long COVID* patients ($n = 35$ IHHT, $n = 35$ control), adding IHHT (3x per week, 10–12 % O_2 for hypoxia, 30–35 % O_2 for hyperoxia) during inpatient rehabilitation significantly improved 6MWT walking distance compared to standard rehabilitation alone. Secondary endpoints such as stair climbing, dyspnoea (*Borg Scale*) and fatigue (*Fatigue Assessment Scale*) also showed trends towards improvement, though without statistical significance⁶.

HYPOTHESIS The cardiorespiratory effects of IHHT may arise from improved endothelial function and enhanced oxygen utilisation in peripheral tissues. However, data on long-term effects on cardiovascular events (e.g., myocardial infarction) or mortality are currently unavailable. Future research should determine whether IHHT yields similar effects in patients with heart failure and whether combining it with pharmacological therapy (e.g., SGLT2 inhibitors) produces synergistic benefits.

Inflammation

Evidence: In 65 patients with metabolic syndrome (MS), a 3-week IHHT programme (5x per week, hypoxia: 10 % O_2 , hyperoxia: 30 % O_2) significantly improved lipid profiles (reductions in total cholesterol, LDL and triglycerides) and reduced inflammatory markers such as *high-sensitivity C-reactive protein* (hs-CRP) and *Galectin-3*. The control group (room air) showed no changes³.

Evidence: In an observational study of 29 older participants (13 healthy, 16 with mild cognitive impairment, MCI), IHHT (3 weeks, 5× per week, hypoxia: 12 % O₂, hyperoxia: 33 % O₂) improved the latency of cognitive evoked potentials and reduced *Amyloid-β* (Aβ) expression in platelets. *Matrix metalloproteinase 9* (MMP9) activity also increased, while *Neutrophil Extracellular Trap* (NET) formation decreased—indicative of anti-inflammatory effects ¹¹.

PLAUSIBLE A systematic review of IHHT and intermittent hypoxia-normoxia therapy (IHNT) in ageing and age-related diseases reports that moderate hypoxia enhances telomerase activity, reduces senescence-associated markers and upregulates pluripotency markers (e.g., *Oct4*) in preclinical studies. These effects may contribute to the anti-inflammatory properties of IHHT, though their relevance in humans remains to be investigated ¹⁰.

HYPOTHESIS The anti-inflammatory effects of IHHT may involve modulation of the *Nuclear Factor kappa B* (NF-κB) pathway, which is inhibited by hypoxia-induced HIF-1α activation. Future research should investigate whether IHHT produces similar effects in chronic inflammatory conditions (e.g., rheumatoid arthritis).

Safety and Tolerability

Evidence: In a randomised controlled trial of 127 patients with coronary heart disease (CHD) prior to coronary artery bypass grafting (CABG), IHHT (hypoxia: 10–12 % O₂, hyperoxia: 30–40 % O₂) significantly reduced postoperative troponin-I levels after 24 hours (median: 1.068 ng/mL vs. 1.980 ng/mL in controls, *P* = 0.012) and lowered lactate levels (1.74 mmol/L vs. 2.10 mmol/L, *P* = 0.045). The therapy was well tolerated without serious adverse events, and intraoperative complications did not occur more frequently ⁵.

Evidence: A systematic review and meta-analysis of 321 participants from seven studies showed IHHT to be safe in musculoskeletal dysfunctions and to significantly improve pain (SMD = −0.5, *P* < 0.0001) and general health (MD = −12.06, *P* < 0.00001). Study heterogeneity was moderate, and no serious adverse events were reported.

PLAUSIBLE An exploratory pilot study of 12 healthy volunteers comparing two IHHT protocols (training vs. conditioning) found both to be well tolerated. The conditioning protocol (shorter hypoxia phases) resulted in a smaller increase in interleukin-6 (*P* = 0.021) and may therefore be better suited for sensitive populations ¹³.

HYPOTHESIS The good tolerability of IHHT may stem from adaptive mechanisms such as upregulation of antioxidant enzymes (e.g., *superoxide dismutase*), induced by moderate hypoxia. However, long-term safety data for repeated use over months or years are lacking. Future research should assess whether IHHT can be safely administered to patients with severe pulmonary conditions (e.g., COPD).

Skin and Gut Microbiome

Evidence: A randomised, placebo-controlled trial in 104 female patients with *Myalgic Encephalomyelitis/Chronic Fatigue Syndrome* (ME/CFS) is currently investigating the efficacy of IHHT (8 weeks, hypoxia: 10–12 % O₂, hyperoxia: 30–35 % O₂) on quality of life (primary endpoint: *SF-36 Vitality Domain*), fatigue and autonomic dysfunction. The study also aims to elucidate underlying mechanisms such as immunometabolic dysregulation and vascular dysfunction ⁸. Results are pending.

PLAUSIBLE An observational study of 21 participants (7 healthy, 14 with MCI) found that IHHT (3 weeks, 5× per week, hypoxia: 12 % O₂, hyperoxia: 33 % O₂) reduced *Amyloid-β* (Aβ) expression in platelets and decreased *Neutrophil Extracellular Trap* (NET) formation. These findings provide a preliminary indication of potential modulation of pathways involved in neurodegenerative diseases, though clinical effects remain to be investigated ⁹.

HYPOTHESIS The observed effects on platelets and NETs may suggest an indirect influence on the gut microbiome, as chronic inflammation and microbial metabolites (e.g., *lipopolysaccharides*) promote platelet activation. However, direct studies on IHHT's impact on the microbiome are currently lacking. Future research should examine whether IHHT alters gut microbiome composition and whether such changes correlate with clinical improvements.

Overall Picture

Intermittent hypoxia-hyperoxia therapy (IHHT) has been investigated in controlled human studies for effects on cognitive function, metabolic parameters, cardiovascular fitness, and inflammatory markers. Improvements are particularly documented in geriatric patients (cognitive tests, walking distance) and individuals with metabolic syndrome (lipid profile, inflammatory markers). The therapy is described as safe and well-tolerated in the available studies, even in older or comorbid populations.

PLAUSIBLE The preclinical and mechanistic data suggest a central role for *Hypoxia-Inducible Factor 1α* (HIF-1α), which is stabilised by IHHT and mediates downstream effects such as neuroprotective signalling pathways, mitochondrial biogenesis, and anti-inflammatory mechanisms. **Hypothesis:** However, direct evidence for these mechanisms in human studies is still lacking, particularly in younger populations or specific conditions (e.g., depression, rheumatoid arthritis). **Next steps** would involve determining whether IHHT shows additive effects in combination with other therapies (e.g., exercise, nutrition) and whether the effects persist with repeated application over months or years.

Methodology of the evidence base

[The available studies on IHHT include randomised controlled trials (RCTs) and observational studies with small to medium sample sizes (*n* = 12–127). Typical intervention durations range from 3 to 8 weeks, with most protocols involving 3–5 sessions per week and 4–6 cycles of hypoxia (10–14 % O₂ for 4–7 minutes) and hyperoxia (30–40 % O₂ for 2–4 minutes). Primary endpoints often include cognitive tests (e.g., DemTect, CDT), functional capacity (6MWT, VO₂peak), metabolic parameters (glucose, lipids), or inflammatory markers (hs-CRP, MMP9). Systematic weaknesses in the studies include the lack of long-term follow-ups (mostly only 1–3 months), small sample sizes, and the absence of standardised protocols (e.g., duration of hypoxia/hyperoxia phases, oxygen concentrations). Additionally, studies on specific patient groups (e.g., children, pregnant women) or combinations with other therapies (e.g., pharmacotherapy) are still lacking.]

Combination therapy or standalone procedure?

The

GREATEST METHODOLOGICAL WEAKNESS

in IHHT research is the failure to separate therapy from adjunct interventions. Almost all controlled studies combine IHHT with exercise, dietary changes, or cognitive training—interventions whose efficacy is already established. Whether IHHT **alone** produces measurable effects therefore remains unanswered. For example, the frequently cited 2017 study on cognitive performance in geriatric patients shows improvements, but only in combination with multimodal training. Similarly, in cardiac rehabilitation, IHHT is always accompanied by endurance training. This raises the question of whether IHHT should be classified as a **standalone therapeutic procedure** or merely as an **adjunct measure**.

A further issue is the

LACK OF STANDARDISED PROTOCOLS

. Oxygen concentrations, cycle lengths, and total duration vary between studies, complicating direct comparisons. Moreover, **no long-term data** exist: the longest follow-up period is 12 weeks, leaving it unclear whether observed effects (e.g., on inflammatory markers or cognitive tests) are sustained. Research in this area is still in its infancy—not because the method is ineffective, but because the critical studies on isolated effects and dose-response relationships are missing.

3. How Robust Is the Research?

The evaluated studies on IHHT focus on **three main application areas**: metabolism (primarily metabolic syndrome and obesity), cardiovascular diseases (coronary heart disease, rehabilitation after bypass surgery), and cognition (geriatric patients, mild cognitive impairment). Notably, **all controlled studies examine IHHT in combination with other interventions**—such as exercise therapy, multimodal rehabilitation, or cognitive training. This makes it difficult to isolate the effects of IHHT. Most studies have been published in the last five years, indicating a growing but still young field of research.

Methodologically, the studies are **heterogeneous**: while controlled trials are randomised and blinded, placebo controls (e.g., normoxic air instead of hyperoxia) are often missing. Sample sizes are small and highly selected (e.g., older patients with comorbidities). The **studies cited most frequently** (e.g., on cognitive performance or cardiac rehabilitation) show consistent trends, but lack clinically validated endpoints. Laboratory parameters such as inflammatory markers or lipid profiles showed improvements in some studies, but whether this translates into patient-relevant outcomes remains unclear. The only animal study (2023) suggests preclinical effects but is not transferable to humans.

4. Common Claims — and What the Data Support

CLAIM	EVIDENCE BASE
IHHT for chronic fatigue (ME/CFS)	The only ongoing study (2026) is a protocol without results. Observational data or preclinical indications are still pending.
Anti-inflammatory effect	Individual studies have shown reductions in inflammatory markers (e.g., IL-6), though no clinical endpoints such as pain reduction or disease progression have
Performance enhancement in healthy individuals	No controlled studies. The animal study (2023) suggests preclinical effects but is not transferable.
Skin rejuvenation	A single controlled study (2024) assessed subjective parameters (self-assessment), with no objective measurements such as collagen content or wrinkle redu

5. The Most Robust Studies

Ranked by evidence strength, not prominence. The full evaluation includes significantly more studies; these are the most reliable.

Controlled Human Studies

- Intermittent hypoxic-hyperoxic training on cognitive performance in geriatric patients (2017)
- ¹ Adaptations following an intermittent hypoxia-hyperoxia training in coronary artery disease patients: a controlled study (2017)
- ² Intermittent Hypoxia-Hyperoxia Conditioning Improves Cardiorespiratory Fitness in Older Comorbid Cardiac Outpatients Without Hematological Changes: A ... (2018)
- ³ The Effects of Intermittent Hypoxic-Hyperoxic Exposures on Lipid Profile and Inflammation in Patients With Metabolic Syndrome (2021)
- ⁴ Effects of intermittent hypoxia-hyperoxia on mobility and perceived health in geriatric patients performing a multimodal training intervention: a ... (2019)

- ⁵ Intermittent systemic hypoxic-hyperoxic training for myocardial protection in patients undergoing coronary artery bypass surgery: first results from ... (2018)
- ⁶ Intermittent Hypoxic-Hyperoxic Training During Inpatient Rehabilitation Improves Exercise Capacity and Functional Outcome in Patients With Long ... (2024)
- ⁷ The Impact of Intermittent Hypoxia-Hyperoxia Therapy on Metabolism and Respiratory System in Obese Patients as Part of Comprehensive Medical ... (2024)
- ⁸ REenergizeME: intermittent hypoxia-hyperoxia treatment for myalgic encephalomyelitis/chronic fatigue syndrome—protocol for a randomised ... (2026)

Observational Human Studies

- ⁹ Intermittent Hypoxia-Hyperoxia Training Improves Cognitive Function and Decreases Circulating Biomarkers of Alzheimer's Disease in Patients with Mild ... (2019)
- ¹⁰ Effects of Intermittent Hypoxia in Training Regimes and in Obstructive Sleep Apnea on Aging Biomarkers and Age-Related Diseases: A Systematic Review (2022)
- ¹¹ Response of Circulating Inflammatory Markers to Intermittent Hypoxia-Hyperoxia Training in Healthy Elderly People and Patients with Mild Cognitive ... (2022)
- ¹² Enhancing HIF-1 α -P2X2 signaling in dorsal raphe serotonergic neurons promotes psychological resilience (2024)
- ¹³ Optimizing Intermittent Hypoxic-Hyperoxic Training for Safety and Feasibility: An Exploratory Pilot Study (2026)
- Effectiveness of intermittent hypoxia-hyperoxia therapy for pain and general health in adults with musculoskeletal dysfunctions: A systematic review ... (2026)

6. Summary

Evidence-based: In controlled human studies, intermittent hypoxic-hyperoxic training (IHHT) shows consistent effects on cognitive test performance (e.g., *DemTect*, *Clock Drawing Test*) and cardiovascular fitness (6MWT, ejection fraction). Improvements in metabolic laboratory parameters (lipid profile, renal and liver function) and inflammatory markers (hs-CRP, galectin-3) were observed, but their clinical relevance is not yet established. Effects on postoperative laboratory values (e.g., troponin-I levels after bypass surgery) and increased physical endurance were also reported, particularly in geriatric patients and those with metabolic syndrome. Studies often combine IHHT with exercise or rehabilitation, limiting conclusions about its isolated effect.

PLAUSIBLE Preclinical and mechanistic data suggest a central role for *hypoxia-inducible factor 1 α* (HIF-1 α), which is stabilised by IHHT. This pathway may mediate downstream effects such as neuroprotective mechanisms (e.g., BDNF expression), mitochondrial biogenesis and anti-inflammatory processes (e.g., inhibition of the NF- κ B pathway). Animal studies show that HIF-1 α stabilisation in the *dorsal raphe nucleus* can produce antidepressant-like effects lasting up to three months, but these findings are not yet confirmed in humans. **Hypothesis:** The observed cognitive and metabolic improvements may result from neuroplastic adaptations and increased mitochondrial efficiency. IHHT may also indirectly influence the microbiome via modulation of the gut-brain axis, as platelets and neutrophils are involved in inflammatory processes.

Next steps should clarify whether IHHT produces similar effects in younger patients with mild cognitive impairment (MCI) or specific conditions such as depression or rheumatoid arthritis. It also remains unclear whether combining IHHT with other therapies (e.g., metabolic nutrition, cognitive training or pharmacological approaches such as SGLT2 inhibitors) yields additive or synergistic benefits. Long-term data on the durability of effects and safety with repeated application over months or years are also needed. Finally, it should be examined whether IHHT can be safely applied in patients with severe pulmonary conditions (e.g., COPD) and whether protocols (e.g., duration and intensity of hypoxia and hyperoxia phases) can be further standardised to optimise efficacy.

7. Open Questions

- **Isolated effect:** Does IHHT produce effects without concurrent exercise therapy?
- **Long-term effects:** Do observed improvements (e.g., cognitive performance) persist beyond 12 weeks?
- **Dose-response relationship:** What cycle lengths and oxygen concentrations are optimal?

Frequently Asked Questions

Is IHHT suitable for rehabilitation after COVID-19 (Long COVID)?

A controlled study (2024) examined IHHT in combination with inpatient rehabilitation in Long COVID patients. The results show improvements in **exercise capacity** (6-minute walk test) and **subjective fatigue**, but no placebo control. Since the therapy was always combined with exercise therapy, it remains unclear whether IHHT alone is effective. The study provides initial indications but no robust evidence to support a recommendation.

Can IHHT be used for metabolic syndrome?

Two controlled studies (2021, 2024) evaluated IHHT in metabolic syndrome and obesity. Both show **improvements in lipid profiles** (e.g., triglycerides) and **inflammatory markers** (e.g., CRP), but no significant effects on **blood glucose** or **body weight**. In both cases, the therapy was combined with dietary changes and exercise. Whether IHHT alone yields similar effects remains to be determined.

Are there risks or contraindications for IHHT?

Three safety studies (2017–2024) examined IHHT in older patients and those with cardiovascular diseases. **No serious adverse events** were reported, though individual cases of **headaches, dizziness, or mild shortness of breath** occurred. Contraindications have not been systematically investigated, but due to the hypoxic phases, **acute infections, severe lung diseases (e.g., COPD), or unstable cardiovascular conditions** are discussed as exclusion criteria. Individual risk assessment is required.

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International Health Research

Research, put in context. Every statement leads to the original paper; the decision in the individual case rests with the treating professional.
ih-research.com/en/knowledge/intermittent-hypoxia-hyperoxia-therapy/ · Last updated 2026-10-15