

Heliotherapy

Sunlight, light signaling, and light therapy — one continuous story

Light is not just something you see by. It's a signal your body has been reading for its entire existence — setting your internal clock, building vitamin D, and, more recently, showing up in a red glow on skincare shelves. Here's how sunlight, light signaling, and modern light therapy are really one continuous story.

01

THE ORIGINAL HELIOTHERAPY

In 1903, Danish physician Niels Finsen won the Nobel Prize in Medicine for showing that concentrated light could treat lupus vulgaris, a form of skin tuberculosis — one of the first Nobel Prizes ever awarded in medicine. His work helped launch an era of sanatoriums across Europe and North America that used direct sun exposure, called heliotherapy, as a standard tuberculosis treatment, decades before antibiotics existed.

GETTING STARTED

Finsen discovered his own interest in light therapy after noticing that sunlight made his symptoms from a metabolic illness feel more manageable — an observation that became a career.

02

VITAMIN D: SUNLIGHT YOU CAN MEASURE

UVB rays trigger a reaction in skin that converts a cholesterol-derived compound into vitamin D3, which the liver and kidneys then finish converting into its active form. It's one of the few nutrients your body can manufacture entirely from a free, external source — which is also why vitamin D deficiency became common once indoor work and sun avoidance became the cultural default.

GETTING STARTED

Midday sun exposes more skin to UVB per minute than early morning or evening light, when the sun's angle filters more of it out.

03

LIGHT SIGNALING: HOW YOUR EYES SET YOUR INTERNAL CLOCK

A small population of light-sensing cells in the retina — distinct from the rods and cones used for vision — contain a pigment called melanopsin and connect directly to the suprachiasmatic nucleus, the brain's master clock. These cells are most sensitive to blue-toned light, which is why bright morning light helps anchor your circadian rhythm and regulate melatonin timing later that night.

GETTING STARTED

Getting outside within an hour of waking, even on a cloudy day, delivers far more of this signal than any indoor lighting typically does.

04

RED LIGHT THERAPY: THE MODERN DESCENDANT

Red and near-infrared light (roughly 600–900nm) are absorbed by an enzyme in mitochondria called cytochrome c oxidase, which plays a central role in producing the cell's energy currency, ATP. Research so far shows this mechanism clearly at the cell and tissue level, with growing but still-developing clinical evidence in areas like wound healing, skin, and recovery — a direct, high-tech descendant of Finsen's original light-based medicine.

GETTING STARTED

Look for devices specifying wavelength (ideally 630–660nm red or 810–850nm near-infrared) rather than just “red light,” since wavelength is what determines whether the light reaches its target.

05

PRACTICING SAFE SUN EXPOSURE

The line between heliotherapy and sunburn is really just dose. Shorter, more frequent exposure without burning delivers the vitamin D and circadian benefits without the skin damage that comes from overexposure — burning is the actual harm, not sunlight itself.

GETTING STARTED

Fair skin generally needs far less time than deep skin tones to produce the same vitamin D response — adjust your exposure time to your own skin, not a generic number.

Start with what's free

Explore our free Heliotherapy class and more — and sign up for our newsletter to get new guides and class dates first.

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This is general educational information, not medical advice. Sun exposure guidance varies by skin type, medication use, and personal or family skin cancer history — talk with a dermatologist about what's appropriate for you.