Risk–benefit balance of habitual ultraviolet exposure for cardiovascular, cancer, and skin cancer mortality: UK Biobank cohort study.

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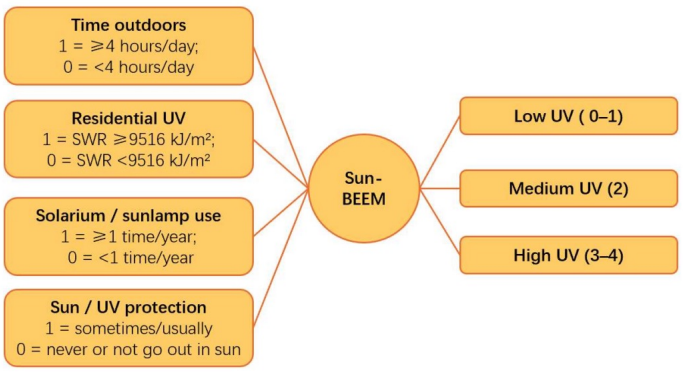

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Characteristic	Low UV (n=200 615)	Medium UV (n=180 861)	High UV (n=37 531)	P value*
Sex (male)	91 481 (46%)	83 878 (46%)	19 524 (52%)	<0.001
Age group, years				<0.001
37–47	33 784 (17%)	31 772 (18%)	6 439 (17%)	
48–54	42 284 (21%)	36 345 (20%)	6 749 (18%)	
55–59	38 300 (19%)	32 093 (18%)	5 821 (16%)	
60–63	40 702 (20%)	36 240 (20%)	7 767 (21%)	
64–73	45 545 (23%)	44 411 (25%)	10 755 (29%)	

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Conclusions

Higher habitual UV exposure, measured using a multidimensional score, was associated with lower cardiovascular and non-skin cancer mortality without clear increases in skin cancer mortality, supporting a more balanced view of sunlight and health.

Summary box

What is already known on this topic

- Public health advice in temperate countries mainly treats sunlight as a skin cancer hazard.
- Few studies have explicitly quantified the trade-off between the potential benefits of habitual ultraviolet exposure for major non-skin diseases and its harms for skin cancer.
- Mechanistic research on how ultraviolet exposure affects health outcomes has focused largely on vitamin D, with only limited work on non–vitamin D pathways.

What this study adds

- A multidimensional UV exposure score (Sun-BEEM), combining environmental and behavioural indicators, was associated with lower all-cause, cardiovascular, and non-skin cancer mortality, without clear increases in skin cancer mortality.
- Counterfactual analyses suggested a net balance favouring cardiovascular and cancer mortality benefits over skin cancer harms; proteomics supported mainly non–vitamin D pathways.

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- For every malignant skin cancer fatality saved by staying indoors, 75 deaths from other causes occur because of lack of exposure to the healing power of natural daylight.
- For every extra malignant skin cancer fatality caused by increased UV exposure, there would be 134 lives saved from all other causes of death, including heart attacks, and non-skin cancers (e.g. breast, prostate and colorectal cancer)

This study is still in the peer-review process and so it may be subject to final revisions, but it does suggest there is about a 1:100 ratio between deaths caused by UV exposure and deaths saved by UV exposure.

Dr. Martin Moore-Ede

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1903
NIELS RYBERG FINSEN (1860-1904)

Danish physician.

Nationality - Denmark

- The 1903 Nobel prize in Physiology or Medicine was awarded to Niels Ryberg Finsen "*in recognition of his contribution to the treatment of diseases, especially lupus vulgaris, with concentrated light radiation, whereby he has opened a new avenue for medical science.*"

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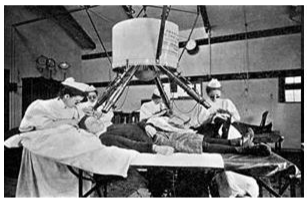
Princess of Wales donates Finsen lamp to the London Hospital **1900**

- **Tuberculosis - the Lamps of Hope**

During the 1890s, Niels Ryberg Finsen (1860-1904), a Danish physician, investigated the bactericidal effects of light which he found was more effective at the ultra-violet end of the spectrum. He constructed a powerful carbon arc electric lamp with four tubes down which light was passed.

- Finsen's results at treating lupus were so successful that in 1896, the Finsen Institute was set up in Copenhagen and by the turn of the century, 500 patients had been treated.



- Patients undergoing treatment for lupus vulgaris.

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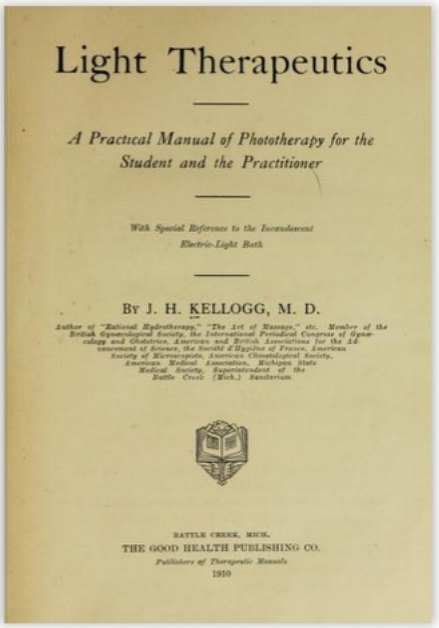

Light Therapeutics

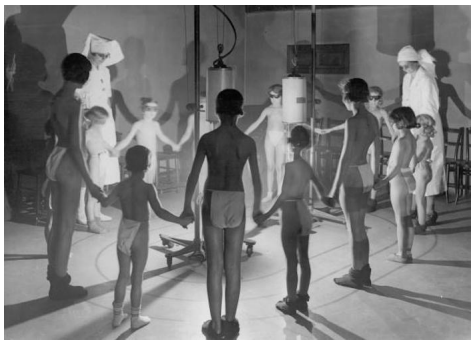
A Practical Manual of Phototherapy for the Student and the Practitioner

With Special Reference to the Incandescent Electric-Light Bath

By J. H. KELLOGG, M. D.

Author of "Rational Hydrotherapy," "The Art of Massage," etc. Member of the British Gynæcological Society, the International Periodical Congress of Gynæcology and Obstetrics, American and British Associations for the Advancement of Science, the Société d'Hygiène of France, American Society of Microscopists, American Climatological Society, American Medical Association, Michigan State Medical Society, Superintendent of the Battle Creek (Mich.) Sanitarium

BATTLE CREEK, MICH.
THE GOOD HEALTH PUBLISHING CO.
Publishers of Therapeutic Manuals
1910



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THE PAST

Beneficial effects of UV radiation on diseases other than cancer

Asta Juzeniene

Heliotherapy

By the year 1933, there were over 165 different diseases for which sunlight proved to be a beneficial treatment.

Old studies revealed that exposing patients to **controlled amounts of sunlight**

- ✓cured some infectious diseases,
- ✓lowered blood pressure (up to 40 mm Hg drop),
- ✓decreased cholesterol,
- ✓lowered abnormally high blood sugar in diabetics,
- ✓increased the number of white blood cells.

- ❑Gout (podagra),
- ❑rheumatoid arthritis,
- ❑colitis,
- ❑arteriosclerosis,
- ❑anemia,
- ❑cystitis,
- ❑eczema, acne, psoriasis, herpes, lupus, sciatica,
- ❑kidney problems,
- ❑asthma,
- ❑burns, etc.

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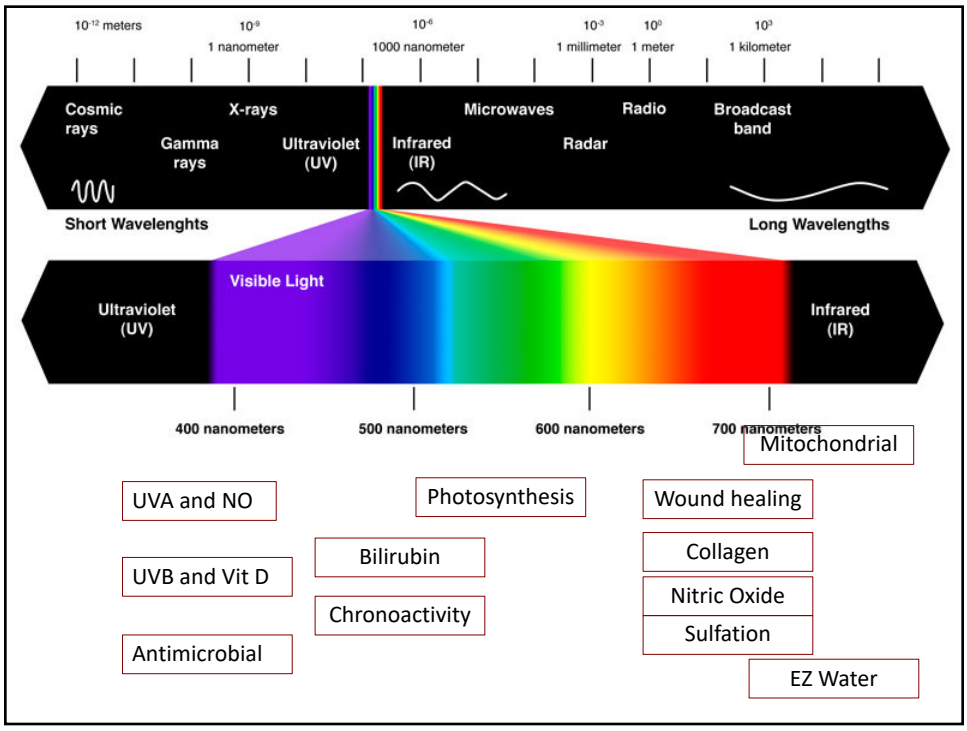

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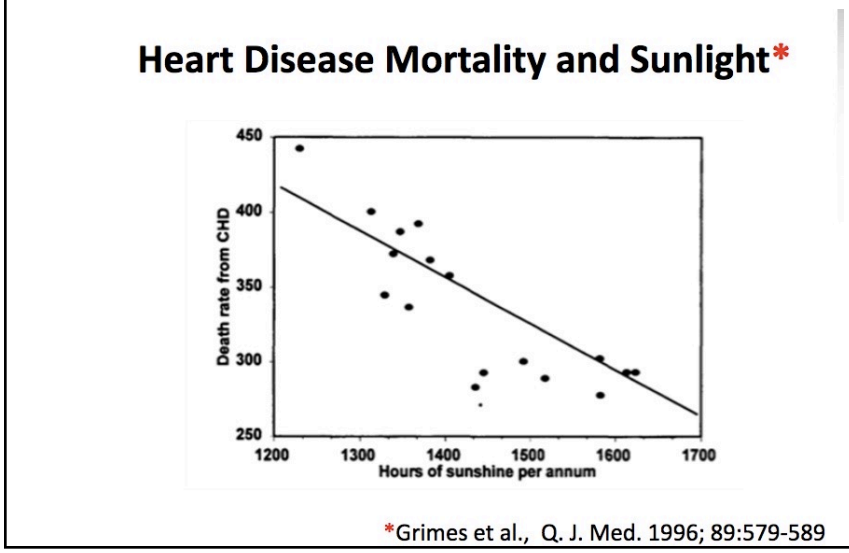
QJM. 1996 Aug;89(8):579-89.

Sunlight, cholesterol and coronary heart disease.

Grimes DS[1], Hindle E, Dyer T.



*Grimes et al., Q. J. Med. 1996; 89:579-589

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Contemporary Reviews in Cardiovascular Medicine

The "Sunshine Deficit" and Cardiovascular Disease

Diane E. Wallis, MD; Sue Penckofer, RN, PhD; Glen W. Sizemore, MD

In past decades, the primary focus on vitamin D was the recognition and treatment of deficiency as it related to metabolic bone disease (rickets, osteomalacia, and secondary hyperparathyroidism). In the last 10 years, however, with the discovery of vitamin D receptors in multiple tissue types has come the recognition that the role of vitamin D extends beyond the musculoskeletal system.[1] The presence of abundant vitamin D receptors in myocardial tissue and vasculature and the observation that hypertension may be ameliorated with vitamin D suggest a greater role for vitamin D in the cardiovascular system.[2] Presently, large numbers of people are found to have hypovitaminosis D (a term chosen for this review to indicate any concentration below normal under substrate-saturated conditions) resulting in part from more indoor activities and the purposeful avoidance of sunshine. This review first describes why vitamin D, parathyroid hormone (PTH), and the skeleton are important to the heart and vasculature, then outlines why the epidemic of hypovi-

calcium-phosphorus homeostasis, and it helps to maintain normal ionized calcium and phosphorus concentrations. PTH secretion is inversely related to ionized calcium concentration; thus, if the ionized calcium concentration drops, PTH secretion increases and restores normal calcium concentration. This is accomplished as the hormone stimulates renal production of calcitriol, increases osteoclastic bone resorption, increases gastrointestinal calcium absorption, and increases renal tubular resorption of calcium. PTH secretion is affected not only by vitamin D but also by disorders of magnesium and phosphorus metabolism, which may occur in conditions of malnutrition, malabsorption, aluminum toxicity, renal disease, and malignancy.[1–3]

Cardiac Effects of Vitamin D and PTH

The role that vitamin D and PTH play in cardiac function appears greater than previously thought. Table 1 provides a summary of reported vitamin D and PTH effects on the

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Original Article Journal of INTERNAL MEDICINE

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Avoidance of sun exposure as a risk factor for major causes of death: a competing risk analysis of the Melanoma in Southern Sweden cohort

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From the [1]Clintec, Karolinska Institutet, Department of Obstetrics and Gynecology, Karolinska University Hospital, Huddinge; [2]Department of Obstetrics and Gynecology, Mothers and Childrens Health, Karolinska University Hospital, Solna, Stockholm; [3]Department of Dermatology, Helsingborg Hospital, Clinical Sciences, Lund University; [4]Department of Endocrinology, Clinical Sciences, Lund University Hospital; [5]Department of Surgery, Clinical Sciences, University Hospital; and [6]Departments of Oncology and Cancer Epidemiology, Lund University Hospital, Lund, Sweden

- All cause mortality in 29,518 women in relationship to sun exposure
- Prospective 20-year follow-up
- Women with active sun exposure habits were mainly at a lower risk of cardiovascular disease (CVD) and noncancer/non-CVD death as compared to those who avoided sun exposure.
- Conclusion. The longer life expectancy amongst women with active sun exposure habits was related to a decrease in CVD and noncancer/non-CVD mortality, causing the relative contribution of death due to cancer to increase.

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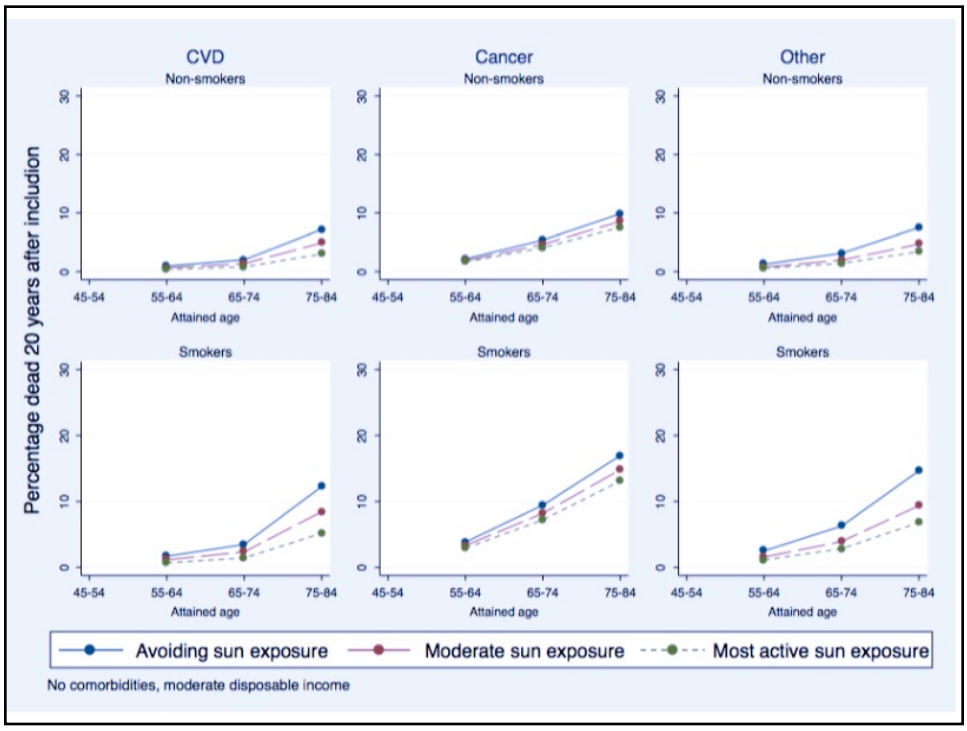
CVD
Cancer
Other
Non-smokers
Smokers
Percentage dead 20 years after includion
0
10
20
30
45-54
55-64
65-74
75-84
Attained age
Avoiding sun exposure
Moderate sun exposure
Most active sun exposure
No comorbidities, moderate disposable income

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Heliophobia

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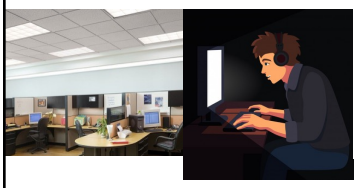
zeitgeber | a cue given by the environment, such as a change in light or temperature, to reset the internal body clock.
from German Zeitgeber, from Zeit 'time' + Geber 'giver'.

Too little of this:




Too much of this:

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Zeitgebers

Logan *et al. Journal of Physiological Anthropology* (2015) 34:9

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