The effects of personalized light schedules during daytime hours on energy level and sleep quality of office workers

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Objective: (1) Is an increase in blue light exposure during daytime office hours effective in increasing subjective alertness and performance levels? (2) Is the timing of light exposure important for this effect and is it different for different...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON36869

Source
ToetsingOnline

Brief title
More light at the office

Condition

- Other condition

Synonym
reduced alertness, sleepiness

Health condition

daytime functioning and night time sleep

Research involving

Human

Sponsors and support

Primary sponsor: Philips Consumer Lifestyle
Source(s) of monetary or material Support: Bedrijf/industrie

Intervention

Keyword: alertness, chronotype, office lighting, sleep-wake rhythm

Outcome measures

Primary outcome

Subjective sleepiness and mood by rating scales. Rest-activity rhythms by

activity meters and sleep characteristics with ZEO.

Secondary outcome

Evaluation of well being and subjective ratings of performance over two weeks,

Eye strain and headache complaints. 24h- light intensity. Chronotype

measurements with rating scale.

Study description

Background summary

Light is not only necessary for vision, but it also has non-image forming effects on mood, alertness and performance. Most studies tested these effects during the night or the early-morning/late-evening hours. Recently studies showed that also daytime light is able to increase alertness and improve performance. The goal of the current study is to test the importance of timing of light exposure during office hours, investigate individual variation in responses, and increase knowledge on the mechanism through which light is effective in improving daytime performance.

Study objective

Objective: (1) Is an increase in blue light exposure during daytime office hours effective in increasing subjective alertness and performance levels? (2)

Is the timing of light exposure important for this effect and is it different for different chronotypes? (3) Is this increase of alertness only an acute effect during exposure or is there also a long-term effect through a better quality of sleep.

Study design

In a cross-over design 45 subjects will participate in a control condition and three experiment light conditions. Each condition will last 2 weeks. In the three experimental conditions light intensity of, mainly blue, light will be increased during 3 hours each day, spread over the day, during at least 4 working days per week.

Intervention

Each condition lasts 2 weeks: (1) normal office lighting (full spectrum light vertical intensity ~ max 200 lux; (2) extra blue light during first 3 hours ..; (3) extra blue light during middle 3 hours ..; (4) extra blue light during last 3 hours of daytime working period.

Study burden and risks

There are no risks involved when participating in this project. Light intensity is much lower compared to the regular exposure to natural light or light of light therapy devices. The light intensity is only increased relative to regular office lighting. The burden for the subjects is relatively low. Subjects perform the measurements mainly at home or during office hours. Due to this, employers have to agree with participations. Wearing an activity meter at the wrist is not prohibiting normal behaviour, the light meter is worn at a necklace and does not induce any disturbance either. At night subjects will be asked to wear an elastic, comfortable band around the head to measure sleep. Rating scales and tests are distributed over time. Daily burden is low (2 min raing scales in the morning). Only during one day each week, subjects are asked to invest more time in rating scales and tests: they will perform the tests at 4 timepoints during the day and each testpoint will last approximately 15 min. In addition at 4 timepoints one rating of sleepiness is collected. Subject receive a PDA for this research purpose and this will not restrict them in performing their normal daily life. Filling in evaluation questionnaires takes place 4 times and last 5 min each.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

• Healthy men and women, ages between 25 and 45 years
• Indoor office workers with a 4-5 days working week
• Habitual working days of 8-9h with at least 3 hours of computer work
• In general the subjective energy profile over the day shows either a morning, a lunch, or an afternoon dip, characterized by increased sleepiness and lowered performance

Exclusion criteria

• Psychiatric diagnose, e.g. mood disorder
• Sleep disorder (PSQI>10, mild sleep complaints are allowed)
• Alcohol or drug problems
• Depressive mood (BDI-II NL > 8)
• Regular use of photosensitizing medication, sleep medication or stimulant drugs
• Colour blindness or other visual impairment that is not solved with contact lenses or glasses
• On average more than 2 naps a week
• High levels of caffeine intake during a day (> 8 cups)
• Shift work schedule in the 3 months prior to participation

• Travel over 2 or more time zones in 1 month prior to participation

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	29-10-2012
Enrollment:	45
Type:	Actual

Ethics review

Approved WMO

Date:	05-11-2012
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL42066.042.12