

Quality of light in a long term care facility in the Netherlands

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H.S.M. KORT (Convener) Creating enriched environments for ageing adults. Gerontechnology 2014; 13(2):85; doi:10.4017/gt.2014.13.02.051.00 **Participants** H.S.M. Kort (Netherlands), E.R.C.M. Huisman (Netherlands), N.H.A.M. van Hout (Netherlands), S. Vorrink (Netherlands), and G. Wets (Belgium) **Issue** The world's population is aging rapidly. More people have to continue working to an older age and they want to participate in society even after they have retired. New technologies support older adults in their efforts to reach emotional and intellectual fulfilment and to integrate into today's society. The elderly in both developed and underdeveloped countries face a variety of challenges. The challenges include knowing how to stay healthy, how to live with chronic conditions, how to continue working and stay productive, how to age-in-place and how to commute safely to and from work. **Content** The International Classifications of Functioning, Disabilities and Health (ICF) model from the World Health Organization¹ offers a workable frame to examine how environmental factors limit or support older people in these challenges. Environmental factors make up the physical, social and attitudinal environments in which people live. Some of these factors are related to physical challenges include: light (e240), time-related changes (e245), sound (e250), the design, construction and building of products and technology within buildings designed for private use (e155), air quality (e260) and products and technology designed to increase a person's indoor and outdoor mobility and to provide methods of transportation (e120). The factors are used to identify facilitators and barriers in the environments of the elderly. Their identification offers the possibility of creating an enriched environment for aging adults. The symposium participants will discuss the work done within the Dutch-Flemish chapter of the ISG. **Structure** There will be a short introduction of four oral presentations, followed by a panel discussion. Two presentations will emphasize using daylight or acoustical interventions to create enriched care facilities for people with a chronic conditions. The remaining presentations will emphasize how physical activity may contribute to social inclusion of older adults. **Conclusion** Varied and complex environmental factors affect the lives of aging adults. The presentations at the symposium will show that barriers to aging adults who are limited by their health conditions can be transformed in facilitators for those same adults. This can be done with building-related interventions related to environmental and physical factors as described in the ICF model. These insights will contribute to the design and development of products and services to create life-enriching environments.

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Keywords: (day)light, acoustics, visual (dis)comfort, physical activity

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E.R.C.M. HUISMAN, M.P.J. AARTS, P.L.W. KEMENADE, H.S.M. KORT. Quality of light in a long term care facility in the Netherlands. Gerontechnology 2014; 13(2):85-86; doi:10.4017/gt.2014.13.02.180.00 **Purpose** Several studies describe the importance of light for our physical and psychological wellbeing. Exposure to light can affect human experiences, performance, and physiology via both image-forming and non-image forming processes¹. (Day)light is a key concept for life enrichment care facilities. 'Life enrichment care' is a concept based on healing environments, which targets long term care facilities (Ltcf) rather than hospitals. This concept focuses on the well-being and quality of life of frail elderly in Ltcf². Among Ltcf residents are often people who suffer from some form of dementia. For this group, the image-forming and non-image forming aspects of light play a role. The image-forming or visual aspects of light include the ability to perform daily tasks, and are related to the prevention of falls. The most important non-image forming aspect of light is light's influence on controlling circadian rhythms, or the "biological clock". Older adults with dementia often suffer from disturbances in circadian rhythm, which can lead to behavioral problems including nocturnal unrest³. This nocturnal unrest is mostly treated with sleep medication. However, in previous research, the emphasis was on light in general and electric lighting in specific. No clear distinction was made between electric lighting and daylight⁴. This study investigates the effect of (day)light on the

well-being of frail elderly and healthcare professionals in Ltcf. This paper describes the current quality of light at a Ltcf in the Netherlands, which is discussed with reference to currently available recommended values^{4,5}. **Method** The study was conducted in four living rooms of the psycho geriatric department of a Ltcf in the Netherlands, in July 2012. In order to chart the current quality of light in the Ltcf, several methods were used. The following parameters were quantified⁴ both for electric lighting and for daylight: the horizontal and vertical illuminance at relevant positions and viewing directions; vertical colour temperature at eye level of a sitting resident; and, measurement the luminance ratios for the visual effects of light. To determine the contribution of daylight in illuminating the four living rooms, one series of measurements was done with the electrical lighting switched on and one series with the electrical lighting switched off. **Results & Discussion** In the current situation, about half of the measured positions meet the recommended values of at least 750 lux for the horizontal and vertical illuminance⁶. In the several studies, a minimum horizontal and vertical illuminance value of 750 lux is recommended⁶. However, in other studies values of 1000 lux are mentioned^{4,5}. The aforementioned values of 750 lux were mainly reached on which are relatively close to the window. For positions further away from the window, the illuminance values notably decreased. The measured colour temperature in the living rooms were between 4000 K and 5500K, with some peaks up to 7000 K. A minimum colour temperature value of 5000 K is recommended⁶, and is usually reached when only daylight is present and when viewing in the direction of the window. The measurements in this study took place during summer; it is expected that the illuminance levels in winter do not reach the recommended values. The results will be used as input for the development of another light strategy for Ltcf.

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N.H.A.M. VAN HOUT, C.C.J.M. HAK, S. SEUREN, H.S.M. KORT. Acoustic measurements of sound levels in common rooms and sleeping rooms of care facilities for older adults.

Gerontechnology 2014; 13(2):86-87; doi:10.4017/gt.2014.13.02.156.00 **Purpose** The International Classification of Functioning, Disabilities and Health model from the World Health Organization¹ offers a framework designed to examine how environmental factors can influence the physical, social and attitudinal environment in which people live in a positive or negative way. In other words, these factors can act like facilitators or barriers. Sound is one of these environmental factors. Especially for the frail elderly people, sound can act like a barrier. Older adults dealing with hearing loss can encounter problems in understanding the speech of other people and in holding conversations in noisy environments. High sound levels in sleeping rooms are likely to contribute to abnormal sleep/wakefulness patterns² that older adults often suffer from. This study was designed to examine and gain more insight into the sound sources and the sound levels occurring in rooms of care facilities for older adults. **Method** A field study was performed in five common rooms and five sleeping rooms of care facilities for older adults. Long-term sound level measurements were performed to determine the background noise levels as a function of time and frequency. Sound levels were recorded continuously day and night. The types of sound sources causing the peak levels were determined by listening to