Acoustic measurements of sound levels in common rooms and sleeping rooms of care facilities for older adults

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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

the recordings. **Results & Discussion** Peak sound levels are mostly caused by the slamming of doors (e.g. closets) and activities of residents and professional caregivers. Averaged over the five sleeping rooms the results show in the night period a mean A-weighted background noise level of 32.1 dB. The maximum A-weighted peak levels go up to 97.8 dB. During the day in the common rooms a mean A-weighted background noise level of 55.3 dB was measured with a maximum A-weighted peak levels up to 115.0 dB.

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Table 1. Measurement results of five common rooms and five sleeping rooms; Aeq=A-weighted background noise level; Peak.max=Maximum peak sound level; Peak, 5min= 5min Mean sound level

Parameter (dB)	Common rooms		Sleeping rooms	
	Mean	Range	Mean	Range
L _{Aeq} day	55,3	53,4–57,0	42,7	41,0–45,6
L _{Aeq} night	32,2	29,6–33,7	32,1	28,5–36,5
L _{A,peak,max} day	108,6	101,9–115,0	107,5	99,2–117,0
L _{A,peak,max} night	92,1	83,9–105,4	89,0	83,7–97,8
L _{A,peak,5min,>80,avg} day	90,0	88,6–91,6	88,9	86,9–92,6
L _{A,peak,5min,>80,avg} night	86,1	83,5–89,2	85,2	83,2–87,7

S.N.W. VORRINK, H.S.M. KORT, T. TROOSTERS, J-W.J. LAMMERS. **Development of a mobile phone application for stimulation of personal mobility for COPD patients.** *Gerontechnology* 2014;13(2):87-88; doi:10.4017/gt.2014.13.02.208.00 **Purpose** Chronic Obstructive Pulmonary Disease (COPD) is a disabling airway disease with variable extrapulmonary effects that may contribute to disease severity in individual patients¹. Patients with COPD show reduced levels of spontaneous daily physical activity (DPA) compared with healthy controls². This results in a higher risk of hospital admission and shorter survival³. Pulmonary rehabilitation can help to

Figure 1: Three versions of the app, adjusted from left to right; the newest version is on the right