paradigm shift from employment support towards teaching/training for employers and employees to break these barriers.

Conclusion Despite government initiatives, employment for Learning-disabled adults and their able Family-Carers remains an unfulfilled dream. More targeted employment, teaching/training and flexible-working acknowledging the fragile inter-dependent relationship between Learning-disabled adults and Family-Carers, may prevent a significant loss of manpower and productivity.

1566

VIBRATION INDUCED INJURIES IN HANDS IN LONG-TERM VIBRATION EXPOSED WORKERS

L Gerhardsson*, M Hagberg. *Dept of Occupational and Environmental Medicine, Gothenburg University, Gothenburg, Sweden*

10.1136/oemed-2018-ICOHabstracts.1459

Introduction Long-term vibration exposure may cause neurophysiological disturbances such as dampness and tingling, reduced grip strength and difficulties in handling small objects. Most of the exposed workers are right-handed and thus, the right hand will usually have a higher vibration exposure than the left hand. In this study we are comparing neurophysiological test results in the right and left hand in long-term vibration exposed workers. The underlying hypothesis is that signs of adverse health effects would be more pronounced in the right hand of the workers.

Methods The study is based on 47 (36 males and 11 females; mean-age 50 ± 12 y; mean exposure time 16 y), all former patients from the department of occupational and environmental medicine, Gothenburg university. The comparison group consisted of 29 randomly selected subjects from the general population of Gothenburg. All participants completed several questionnaires and had a standardised medical examination. Thereafter, neurophysiological tests such as muscle strength tests and the determination of thermal and vibration thresholds were performed.

Results No significant differences were found for temperature and vibration thresholds in dig 2 and 5 bilaterally among the workers. Finger muscle tests (Pinch-grip and 3 Chuck grip) were also of the same magnitude in the right and left hand. Hand grip strength (Jamar), however, was significantly higher in the right hand of the workers.

Conclusions Although differences as regards symptoms and neurophysiological test results in the right and left hand of exposed workers have been reported in several studies, the only significant difference noted in this study was a somewhat higher grip strength in the right hand of the workers. That is to be expected, as most of the participants were right handed and therefore probably stronger in their dominant hand.

1583

EVALUATION OF THE KURTOSIS METRIC IN THE PREDICTION OF HEARING TRAUMA IN HUMANS ASSOCIATED WITH INDUSTRIAL NOISE EXPOSURES

¹Wei Qiu*, ²Mei-bian Zhang, ³Chuck A Kardous, ³Thais C Morata, ³William J Murphy, ¹Roger P Hamernik. ¹State University of New York at Plattsburgh, Plattsburgh, USA; ²Zhejiang Provincial Centre for Disease Control and Prevention, Hangzhou, China; ³National Institute for Occupational Safety and Health, Cincinnati, USA

10.1136/oemed-2018-ICOHabstracts.1460

Introduction It is clear from numerous experiments that current noise standards underestimated hearing trauma by complex noise (defined as a background Gaussian noise with embedded high-level transients), and that an energy metric alone is not sufficient to characterise a complex noise for hearing conservation purposes. In this study, a statistical metric of the noise amplitude distribution known as the kurtosis, is evaluated in the prediction of hearing trauma in humans associated with industrial noise exposures.

Methods A human database including 1500 subjects exposed to diverse industrial noises (n=650 Gaussian noises, n=850 complex noises) was used to analyse the interaction between an energy metric and kurtosis with respect to noise-induced hearing loss (NIHL). Two kurtosis-corrected NIHL prediction models are studied. One kurtosis correction was made through the exposure time; the other was made through exposure energy. The prevalence of NIHL was determined based on:

- at least of the adjusted hearing threshold levels (HTLs), in either ear, at 3, 4, or 6 kHz is equal to or greater than 30 dB;
- an average of the HTLs for both ears that exceeds 25 dB at 1,2,3, and 4 kHz.

Results The dose-response relation for the complex noise-exposed subjects showed a higher prevalence of hearing loss for a comparable cumulative noise exposure (CNE) than did the Gaussian noise-exposed subjects. By introducing the kurtosis variable into the CNE calculation, the two dose-response curves could be made to overlap, essentially yielding an equivalent noise-induced effect for the two study groups.

Conclusion Kurtosis adjustment of CNE improved the correlation with NIHL and provided a single metric for dose-response effects across diverse types of noise. The kurtosis-adjusted CNE metric may be a reasonable candidate for use in NIHL risk assessment across a wide variety of noise environments

1750

VOCAL EFFORT IN TEACHERS: DOSE MEASUREMENTS AND CLASSROOM ACOUSTIC PARAMETERS

R Sisto*, D Annesi, P Nataletti, F Sanjust, A Moschetto, L Cerini. *INAIL Research, Department of Occupational and Environmental Medicine, Epidemiology and Hygiene, Monteporzio Catone, Italy*

10.1136/oemed-2018-ICOHabstracts.1461

Introduction Literature data show that teachers are exposed to increased risk for diseases of the phonatory apparatus. This circumstance is explained by the high phonatory load of teaching and by classroom noise. As passive acoustic requirements of the school buildings are often not respected, the intelligibility inside the classrooms is poor, increasing the teacher's voice loudness. This work is aimed at studying relations between long reverberation times, high noise levels and vocal effort.

Methods Phonatory effort was evaluated in three school complexes, on a sample of nursery (6 subjects), primary (9), junior high (2) and high (8) school teachers. The classrooms were classified as acoustically treated or not. Speech intelligibility was quantified by the speech transmission index (STI). Phonatory doses were correlated to noise exposure levels and to classroom acoustics. The phonatory effort was evaluated with the Ambulatory Phonation Monitor (Kaypentax).