

### **A correlation study of eye lens dose and personal dose equivalent for interventional cardiologists**

This paper presents the dosimetry part of the European ELDO project, funded by the DoReMi Network of Excellence, in which a method was developed to estimate cumulative eye lens doses for past practices based on personal dose equivalent values,  $H_p(10)$ , measured above the lead apron at several positions at the collar, chest and waist levels. Measurement campaigns on anthropomorphic phantoms were carried out in typical interventional settings considering different tube projections and configurations, beam energies and filtration, operator positions and access routes and using both mono-tube and biplane X-ray systems. Measurements showed that eye lens dose correlates best with  $H_p(10)$  measured on the left side of the phantom at the level of the collar, although this correlation implicates high spreads (41 %). Nonetheless, for retrospective dose assessment,  $H_p(10)$  records are often the only option for eye dose estimates and the typically used chest left whole-body dose measurement remains useful.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), IRSN Institut de Radioprotection et de Surete Nucleaire, Nuclear Research Centre, Greek Atomic Energy Commission, Federal Office for Radiation Protection, STUK - Radiation and Nuclear Safety Authority

Contributors: Farah, J., Struelens, L., Dabin, J., Koukorava, C., Donadille, L., Jacob, S., Schnelzer, M., Auvinen, A., Vanhavere, F., Clairand, I.

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Research output: Contribution to journal › Article › Scientific › peer-review

### **Activity Level and Body Mass Index as Predictors of Physical Workload During Working Career**

The increasing prevalence of inactivity and obesity, along with aging, has implications on work capacity of labor force. This study reports the relationships between activity level and BMI by age with objectively measured physical workload. Data were examined from a sample of 19 481 Finnish employees using an estimate of minute-to-minute oxygen consumption based on R-R interval recordings. The mean estimated  $\%VO_{2max}$  during the working day was 12.1 ( $\pm 3.6$ ) and 15.1 ( $\pm 4.5$ )% for men and women, respectively. Based on a linear model, the mean  $\%VO_{2max}$  increased by 1.5%-unit per 10-year increase in age, by 2.1%-unit per  $5 \text{ kg/m}^2$  increase in BMI, and decreased by 1.6%-unit if improving physical activity class by two ( $p < 0.001$  for all). Overweight and obesity, together with inactivity, notably increases workload throughout the career, even though at young adulthood, the daily workload is almost the same for each person regardless of the BMI, activity level, or gender. This study highlights the importance of regular physical activity and normal weight in protecting the worker from excessive physical (cardiovascular) workload during the whole working career.

#### **General information**

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Organisations: BioMediTech, Research group: Personal Health Informatics-PHI, Tyoterveyslaitos

Contributors: Mänttari, S. K., Oksa, J. A., Virkkala, J., Pietilä, J. A.

Publication date: 2019

Peer-reviewed: Yes

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Original language: English

ASJC Scopus subject areas: Safety, Risk, Reliability and Quality, Safety Research, Public Health, Environmental and Occupational Health, Chemical Health and Safety

Keywords: Aging worker, Big data, Functional capacity, Physical activity, Work ability

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Research output: Contribution to journal > Article > Scientific > peer-review

### **A guide for medical information searches of bibliographic databases - psychiatric research as an example**

Information overload, demanding work with strict time limits, and the extensive number of medical bibliographic databases and other research sources all underline the importance of being able to search for up-to-date information effectively.

Medical journals play a key role in providing access to the latest information in medicine and health and bibliographic databases play an important role in accessing them. This paper sheds light on the role of the information search process and discusses how to approach key medical bibliographic databases and information sources, using the field of psychiatry as an example. Because of an increasing amount of information, the constant renewal within the discipline and a variety of services available, those seeking information must precisely define what kind of information they are looking for and from which sources the information needed may be found.

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Organisations: University of Oulu

Contributors: Löhönen, J., Isohanni, M., Nieminen, P., Miettunen, J.

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#### **Publication information**

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Scopus rating (2009): SJR 0.452 SNIP 0.359

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Epidemiology, Health(social science)

Keywords: Bibliographic databases, Information search, Information sources, Medicine, Psychiatry

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#### **Bibliographical note**

EXT="Löhönen, Johanna"

Source: Scopus

Source ID: 70349817307

Research output: Contribution to journal > Article > Scientific > peer-review

### **Application of the ELDO approach to assess cumulative eye lens doses for interventional cardiologists**

In preparation of a large European epidemiological study on the relation between eye lens dose and the occurrence of lens opacities, the European ELDO project focused on the development of practical methods to estimate retrospectively cumulative eye lens dose for interventional medical professionals exposed to radiation. The present paper applies one of the ELDO approaches, correlating eye lens dose to whole-body doses, to assess cumulative eye lens dose for 14 different Finnish interventional cardiologists for whom annual whole-body dose records were available for their entire working period. The estimated cumulative left and right eye lens dose ranged from 8 to 264 mSv and 6 to 225 mSv, respectively. In addition, calculations showed annual eye lens doses sometimes exceeding the new ICRP annual limit of 20 mSv. The

work also highlights the large uncertainties associated with the application of such an approach proving the need for dedicated dosimetry systems in the routine monitoring of the eye lens dose.

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MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Institut de Radioprotection et de Sûreté Nucléaire (IRSN) - PRP-HOM/SDE, Nuclear Research Centre, STUK - Radiation and Nuclear Safety Authority, Greek Atomic Energy Commission, Federal Office for Radiation Protection

Contributors: Farah, J., Struelens, L., Auvinen, A., Jacob, S., Koukorava, C., Schnelzer, M., Vanhavere, F., Clairand, I.

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Original language: English

ASJC Scopus subject areas: Radiology Nuclear Medicine and imaging, Radiological and Ultrasound Technology, Radiation, Public Health, Environmental and Occupational Health, Medicine(all)

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#### Associations between indoor environmental quality in schools and symptom reporting in pupil-administered questionnaires

**Background:** The associations between indoor environmental quality (IEQ) in homes and symptom reporting of children have been extensively studied, but only few large-scale studies have been done in schools. We examined associations between expert-assessed IEQ in schools and pupils' reporting of different symptoms, and whether associations were stronger if participants relate symptoms to the school environment. **Methods:** The questionnaire survey was done in all primary and secondary schools in two areas of Helsinki, Finland. Primary school pupils (grade 3-6, n = 8775, 99 school-buildings) and secondary school pupils (grade 7-9, n = 3410, 30 school-buildings) reported their symptoms. Symptoms were combined into respiratory, lower respiratory, eye, skin, and general symptom groups. Surveys were also done among the parents of the primary school pupils (grade 1-6, n = 3540, 88 school buildings), but results are reported only in the supplement due to the low response rate (20% in 2017 and 13% in 2018). The associations between IEQ and symptoms were analyzed using multilevel logistic regression analysis. **Results:** Several of the IEQ indicators were highly correlated and indicators were therefore mainly analyzed by combining them into a summary score and into latent classes. Dose-response associations were found between IEQ problems and higher reporting of respiratory and general symptoms among both primary and secondary school pupils. Some associations were also observed with lower respiratory and skin symptoms, but not with eye symptoms. The associations were somewhat stronger with symptoms related to the school environment compared to symptoms reported without such relation: For a unit change in IEQ summary score and respiratory symptoms in primary schools, odds ratios were 1.07 (95% CI 1.02-1.06) and 1.04 (95% CI 1.04-1.10), and in secondary schools 1.09 (95% CI 1.01-1.09) and 1.05 (95% CI 1.02-1.17), respectively. **Conclusions:** Expert-assessed IEQ problems in schools were associated with increased reporting of especially respiratory and general symptoms. The associations were only somewhat stronger in magnitude for symptoms reported in relation to the school environment compared to symptoms reported without such relation.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, University of Helsinki Faculty of Medicine, Unit of Civil Engineering, National Public Health Institute

Contributors: Savelieva, K., Marttila, T., Lampi, J., Ung-Lanki, S., Elovainio, M., Pekkanen, J.

Publication date: 27 Dec 2019

Peer-reviewed: Yes

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Keywords: Child health, Indoor environmental quality, Questionnaire, Respiratory symptoms, School, Symptom reporting

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Source: Scopus

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Research output: Contribution to journal > Article > Scientific > peer-review

### Can clean-room particle counters be used as an infection control tool in hospital operating theatres?

Current UK guidelines for the commissioning of hospital operating theatres rely on air-flow checks, identification of "short-circuits" and measurement of airborne microbiological levels under design conditions when the theatre is idle. There is currently no guideline for infection control teams to investigate theatres when an increased infection risk is suspected. This study aims to examine the use of clean-room particle counters as an infection control tool by monitoring particle profiles in air as a surrogate for infectious particles. Particle counters (three- and six-channel) were used to simultaneously measure particle concentrations at the theatre inlet area, two outlets and bed area, under design and working conditions. A significant increase in particles of all size ranges (0.3 to >10µm diameter) was observed when people were introduced. Particle distribution was uneven, with response to environmental changes different at the two outlets. Removal efficiency varied from 52-100%, due to the introduction of particles to the theatre. Within the bed area, significantly different concentrations were measured under design and working conditions; corresponding microbiological samples indicated an associated increase in airborne bacteria. We concluded that particle counters can be used in some aspects of infection control, although more studies are required to fully explore their potential.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: University College London

Contributors: Pankhurst, L. J., Taylor, J., Cloutman-Green, E. A., Hartley, J. C., Lai, K. M.

Number of pages: 11

Pages: 381-391

Publication date: 1 Jun 2012

Peer-reviewed: Yes

### Publication information

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Scopus rating (2012): CiteScore 2.7 SJR 0.528 SNIP 1.121

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: Air, Healthcare, Infection control, Particles, Pathogens, Ventilation

DOIs:

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<http://www.scopus.com/inward/record.url?scp=84861831438&partnerID=8YFLogxK> (Link to publication in Scopus)

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Research output: Contribution to journal > Article > Scientific > peer-review

### **Chernobyl cleanup workers from Estonia: Cohort description and related epidemiological research**

The Estonian study of Chernobyl cleanup workers was one of the first investigations to evaluate the possible health consequences of working in the Chernobyl area (the 30 km exclusion zone and/or adjacent territories) after the 1986 reactor accident. The cohort consists of 4831 men who were dispatched in 1986-1991 for tasks involving decontamination, construction of buildings, transport, radiation measurement, guard duty or other activities. By 31 December 2012, the follow-up of the cohort yielded 102 158 person-years of observation. Exposure and health data were collected by postal questionnaires, biodosimetry evaluations, thyroid screenings, and record-linkages with cancer, causes of death and health insurance reimbursement registers and databases. These data cover socio-demographic factors, employment history, aspects of health behaviour, medical history, work and living conditions in the Chernobyl area, biomarkers of exposure, cancer and non-cancer disease occurrence and causes of death. Cancer incidence data were obtained for 1986-2008, mortality data for 1986-2011 and non-cancer morbidity data for 2004-2012. Although the cohort is relatively small, it has been extensively examined and benefited from comprehensive nationwide population and health registers. The major finding was an increased risk of suicide. Thyroid examinations did not reveal an association with thyroid nodular disease and radiation dose, but did indicate the importance of accounting for screening when making comparisons with unscreened populations. No risk of leukaemia was observed and risks higher than 2.5-fold could be excluded with 95% confidence. Biodosimetry included GPA analyses and chromosomal translocation analyses and indicated that the Estonian cleanup workers experienced a relatively low mean exposure of the order of 0.1 Gy. One value of the Estonian study is in the methodologic processes brought to bear in addressing possible health effects from the Chernobyl accident. Twenty-five years of research are summarised and opportunities for the future listed.

#### **General information**

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MoE publication type: A2 Review article in a scientific journal

Organisations: Prostate cancer research center (PCRC), National Institute for Health Development, Finnish Cancer Registry, STUK - Radiation and Nuclear Safety Authority, University of Pittsburgh Cancer Institute, University of New Mexico, National Cancer Institute, Vanderbilt University

Contributors: Rahu, K., Rahu, M., Tekkel, M., Veidebaum, T., Hakulinen, T., Auvinen, A., Bigbee, W. L., Hartshorne, M. F., Inskip, P. D., Boice, J. D.

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#### **Publication information**

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Scopus rating (2015): CiteScore 2.5 SJR 0.781 SNIP 1.07

Original language: English

ASJC Scopus subject areas: Waste Management and Disposal, Public Health, Environmental and Occupational Health

Keywords: cancer incidence, Chernobyl cleanup workers, cohort, mortality, radiation exposure, record linkage, suicide

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Source: Scopus

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### **Chernobyl cleanup workers from Estonia: Follow-up for cancer incidence and mortality**

This study examined cancer incidence (1986-2008) and mortality (1986-2011) among the Estonian Chernobyl cleanup workers in comparison with the Estonian male population. The cohort of 4810 men was followed through nationwide population, mortality and cancer registries. Cancer and death risks were measured by standardised incidence ratio (SIR) and standardised mortality ratio (SMR), respectively. Poisson regression was used to analyse the effects of year of arrival, duration of stay and time since return on cancer and death risks. The SIR for all cancers was 1.06 with 95% confidence interval 0.93-1.20 (232 cases). Elevated risks were found for cancers of the pharynx, the oesophagus and the joint category of alcohol-related sites. No clear evidence of an increased risk of thyroid cancer, leukaemia or radiation-related cancer sites combined was apparent. The SMR for all causes of death was 1.02 with 95% confidence interval 0.96-1.08 (1018 deaths). Excess mortality was observed for mouth and pharynx cancer, alcohol-related cancer sites together and suicide. Duration of stay rather than year of arrival was associated with increased mortality. Twenty-six years of follow-up of this cohort indicates no definite health effects attributable to radiation, but the elevated suicide risk has persisted.

#### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), National Institute for Health Development, STUK - Radiation and Nuclear Safety Authority, Finnish Cancer Registry, National Cancer Institute, Stony Brook University State University of New York, Vanderbilt University

Contributors: Rahu, K., Auvinen, A., Hakulinen, T., Tekkel, M., Inskip, P. D., Bromet, E. J., Boice, J. D., Rahu, M.

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Peer-reviewed: Yes

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Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Waste Management and Disposal, Medicine(all)

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Research output: Contribution to journal > Article > Scientific > peer-review

### Childhood leukaemia risks: From unexplained findings near nuclear installations to recommendations for future research

Recent findings related to childhood leukaemia incidence near nuclear installations have raised questions which can be answered neither by current knowledge on radiation risk nor by other established risk factors. In 2012, a workshop was organised on this topic with two objectives: (a) review of results and discussion of methodological limitations of studies near nuclear installations; (b) identification of directions for future research into the causes and pathogenesis of childhood leukaemia. The workshop gathered 42 participants from different disciplines, extending widely outside of the radiation protection field. Regarding the proximity of nuclear installations, the need for continuous surveillance of childhood leukaemia incidence was highlighted, including a better characterisation of the local population. The creation of collaborative working groups was recommended for consistency in methodologies and the possibility of combining data for future analyses. Regarding the causes of childhood leukaemia, major fields of research were discussed (environmental risk factors, genetics, infections, immunity, stem cells, experimental research). The need for multidisciplinary collaboration in developing research activities was underlined, including the prevalence of potential predisposition markers and investigating further the infectious aetiology hypothesis. Animal studies and genetic/epigenetic approaches appear of great interest. Routes for future research were pointed out.

### General information

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MoE publication type: A2 Review article in a scientific journal

Organisations: Prostate cancer research center (PCRC), IRSN Institut de Radioprotection et de Surete Nucleaire, Federal Office for Radiation Protection, School of Management (JKK), Université de Paris-Sud, Centro de Biología Molecular Severo Ochoa, CSIC/UAM, University Medical Centre Mainz, National Academy of Sciences, Institute of Social and Preventive Medicine, University of Bern, University of York, Scientific Institute of Public Health WIV-ISP, University of Manchester

Contributors: Laurier, D., Grosche, B., Auvinen, A., Clavel, J., Cobaleda, C., Dehos, A., Hornhardt, S., Jacob, S., Kaatsch, P., Kostı, O., Kuehni, C., Lightfoot, T., Spycher, B., Van Nieuwenhuysse, A., Wakeford, R., Ziegelberger, G.

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Journal: JOURNAL OF RADIOLOGICAL PROTECTION

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Scopus rating (2014): CiteScore 1.9 SJR 0.565 SNIP 1.075

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Waste Management and Disposal, Medicine(all)

Keywords: Aetiology, Childhood, Epidemiology, Leukaemia, Nuclear installations, Risk

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Research output: Contribution to journal > Review Article > Scientific > peer-review

### **Considerations of safety in the development of industrial services: Matter of course or matter of chance?**

Safety management during the delivery of industrial services has gained a great deal of attention in both research and practice. However, it remains unclear whether the consideration of safety at the service development stage is standard procedure or merely an occasional concern. This paper has approached this issue by reviewing the manner in which safety is addressed during development of industrial services. The research data were collected via interviews ( $n = 40$ ) with personnel from four companies—three manufacturers and one service company providing industrial services. The data were content-analyzed using a thematic approach and structured coding. The results showed that although safety was managed efficiently during service delivery, best practices were not adopted during the development stage. Further, a lack of systematic service development practices hindered the consideration of safety during development projects. The adoption of a safety-oriented service development mindset may take time and effort in manufacturing companies that have a long goods-oriented history. This change requires the commitment of top management and enhancement of the safety knowledge of service development team members. Additionally, it is recommended that companies optimize their use of safety data in development decisions and identify the business-related benefits of safety-oriented service development.

#### **General information**

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Organisations: Industrial Engineering and Management, Research group: Centre for Safety Management and Engineering , Ramboll Environment and Health

Contributors: Nenonen, S., Anttila, S., Hyytinen, T., Kivistö-Rahnasto, J.

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Journal: Safety Science

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Original language: English

ASJC Scopus subject areas: Safety, Risk, Reliability and Quality, Safety Research, Public Health, Environmental and Occupational Health

Keywords: Manufacturing, Multi-employer worksite, Safety management, Servitization

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#### **Bibliographical note**

EXT="Anttila, Sanna"

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Source ID: 85084424670

Research output: Contribution to journal > Article > Scientific > peer-review

### **Directions in QPPR development to complement the predictive models used in risk assessment of nanomaterials**

There is an increasing need for predictive risk assessment of nanomaterials (NMs) using methods that are rapid, accurate and resource efficient. To fulfill this need, the development and use of Quantitative Property Property Relationships (QPPRs) for estimating the hazard of NMs and NM-related parameters in exposure modelling seems eminent. In this study, we analyze a selection of models used for hazard and/or exposure assessment of NMs. This analysis was done by identifying all the NM-related properties used in these models related to three categories of data: (i) Intrinsic properties specific to the NM, matrix or experimental conditions, (ii) Extrinsic NM properties related to interaction between the intrinsic properties and (iii) Measured hazard or exposure data. This analysis is combined with the current state of QPPR development to recommend further development of QPPRs for predictive risk assessment of NMs. In particular, the use of descriptors related to the interaction between a NM and its surroundings, e.g. the attachment efficiency is proposed.

#### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Physics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group, Research area: Aerosol Physics, National Institute for Public Health and the Environment, Radboud University Nijmegen, Leiden University

Contributors: Quik, J. T., Bakker, M., van de Meent, D., Poikkimäki, M., Dal Maso, M., Peijnenburg, W.

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Original language: English

ASJC Scopus subject areas: Materials Science (miscellaneous), Safety, Risk, Reliability and Quality, Safety Research, Public Health, Environmental and Occupational Health

Keywords: In silico, Modelling, Nanomaterial, QNAR, QPPR, Risk assessment

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<http://urn.fi/URN:NBN:fi:tty-201902141242>. Embargo ended: 8/02/20

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Research output: Contribution to journal > Article > Scientific > peer-review

### Effect of intervention on decision making of treatment for disease progression, prostate-specific antigen biochemical failure and prostate cancer death

Background: Patient preference for the choice of treatment modality for prostate cancer has increasingly gained attention.

Objective: To assess the impact of client-oriented decision on long-term mortality, disease progression and biochemical failure compared with standard treatment protocol (TP). Methods: With data from a Finnish multicentre, randomized controlled trial with two arms [104 in the enhanced patient participation (EPP) arm and 106 in the TP arm], disease-specific and disease-free survival, biochemical failure with elevated prostate-specific antigen (PSA) level and disease progression were compared between the two arms using Wilcoxon test and also Cox proportional hazards regression model. Results: Patients in the EPP arm had a higher risk of death by 37% [HR, 1.37 (0.87-2.17)] compared with those in the TP arm. Patients in the EPP arm were at increased risk of having biochemical failure by 14% [HR, 1.14 (0.72-1.79)] and for having disease progression by 2% [HR, 1.02 (0.61-1.70)] compared with those in the TP arm. All the differences were non-significant. Conclusions: Patients actively involved in the choice of treatment had higher risk of prostate cancer death but only slightly increased risk of biochemical failure and clinical disease progression. These findings would provide a good reference when patient autonomy for the choice of treatment modality is addressed.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Tampere School of Public Health, Finnish Cancer Registry, Helsinki University Central Hospital, Central Hospital of Seinäjoki, Kymenlaakso Central Hospital, National Taiwan University

Contributors: Huang, R. C. C., Auvinen, A., Hakama, M., Tammela, T. L. J., Ala-Opas, M., Leppilähti, M., Vornanen, T., Chen, H. H.

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Source: Scopus

Source ID: 84912012306

Research output: Contribution to journal › Article › Scientific › peer-review

### **Effect of social support on changes in quality of life in early breast cancer patients: A longitudinal study**

**Background:** Breast cancer diagnosis as well as diversity of the treatment process deteriorates women's quality of life (QOL). Researchers have examined social support and its relations with QOL overall, but less is known about effects of social support on changes in QOL. **Aims:** The aim of this study was to examine social support received from social network and nurses within 6months and QOL in women with breast cancer. **Methods:** Women (N=164) after breast cancer surgery were quasi-randomized to the intervention (n=85) and control groups (n=79). Participants completed two well-known QOL questionnaires, and the questionnaire measuring received social support from network and from nurses both 1week and 6months after the breast cancer surgery. Data were analysed using descriptive statistics and nonparametric tests. Logistic regression model with the enter method was employed to identify associations between social support and negative changes in QOL. **Results:** Affect and aid from network decreased in both groups and affirmation in the intervention group within 6months. No significant changes in received social support from nurses were found within groups. Furthermore, no statistically significant difference in the magnitude of changes over time was found between groups. Received social support had an effect on changes in sexual functioning, global QOL and health and functioning. **Conclusions:** Received social support decreased in both groups within 6months. Significant effects of social support on negative changes on QOL were found. Social support tailored to women's individual needs is an essential part of the care in patients with breast cancer. For further research, longitudinal designs for longer period should be established to explore social support and its effects on QOL.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Tampere University Hospital, School of Management (JKK)

Contributors: Salonen, P., Tarkka, M. T., Kellokumpu-Lehtinen, P. L., Koivisto, A. M., Aalto, P., Kaunonen, M.

Number of pages: 10

Pages: 396-405

Publication date: Jun 2013

Peer-reviewed: Yes

### **Publication information**

Journal: SCANDINAVIAN JOURNAL OF CARING SCIENCES

Volume: 27

Issue number: 2

ISSN (Print): 0283-9318

Ratings:

Scopus rating (2013): CiteScore 2.3 SJR 0.758 SNIP 1.085

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: Breast cancer, Nurses, Nursing, Quality of life, Support, Women

DOIs:

10.1111/j.1471-6712.2012.01050.x

URLs:

<http://www.scopus.com/inward/record.url?scp=84877794987&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84877794987

Research output: Contribution to journal › Article › Scientific › peer-review

### **Effects of energy retrofits on Indoor Air Quality in multifamily buildings**

We assessed 45 multifamily buildings (240 apartments) from Finland and 20 (96 apartments) from Lithuania, out of which 37 buildings in Finland and 15 buildings in Lithuania underwent energy retrofits. Building characteristics, retrofit activities, and energy consumption data were collected, and Indoor Air Quality (IAQ) parameters, including carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), formaldehyde (CH<sub>2</sub>O), selected volatile organic compounds (benzene, toluene, ethylbenzene, and xylenes (BTEX), radon, and microbial content in settled dust were measured before and after the retrofits. After the retrofits, heating energy consumption decreased by an average of 24% and 49% in Finnish and Lithuanian buildings,

respectively. After the retrofits of Finnish buildings, there was a significant increase in BTEX concentrations (estimated mean increase of  $2.5 \mu\text{g}/\text{m}^3$ ), whereas significant reductions were seen in fungal (0.6-log reduction in cells/ $\text{m}^2/\text{d}$ ) and bacterial (0.6-log reduction in gram-positive and 0.9-log reduction in gram-negative bacterial cells/ $\text{m}^2/\text{d}$ ) concentrations. In Lithuanian buildings, radon concentrations were significantly increased (estimated mean increase of  $13.8 \text{ Bq}/\text{m}^3$ ) after the retrofits. Mechanical ventilation was associated with significantly lower  $\text{CH}_2\text{O}$  concentrations in Finnish buildings. The results and recommendations presented in this paper can inform building retrofit studies and other programs and policies aimed to improve indoor environment and health.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Concrete and Bridge Structures, National Public Health Institute, Lappeenranta University of Technology, Kaunas University of Technology

Contributors: Du, L., Leivo, V., Prasauskas, T., Täubel, M., Martuzevicius, D., Haverinen-Shaughnessy, U.

Publication date: 28 Mar 2019

Peer-reviewed: Yes

### Publication information

Journal: Indoor Air

ISSN (Print): 0905-6947

Ratings:

Scopus rating (2019): CiteScore 9 SJR 1.307 SNIP 2.03

Original language: English

ASJC Scopus subject areas: Environmental Engineering, Building and Construction, Public Health, Environmental and Occupational Health

Keywords: bacteria, chemical exposure, fungi, microbial exposure, radon, residential building

DOIs:

10.1111/ina.12555

URLs:

<http://www.scopus.com/inward/record.url?scp=85064549626&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

INT=CENG,"Haverinen-Shaughnessy, Ulla"

Source: Scopus

Source ID: 85064549626

Research output: Contribution to journal > Article > Scientific > peer-review

### Excess all-cause mortality in the evaluation of a screening trial to account for selective participation

**Objective** In addition to disease-specific mortality, a randomized controlled cancer screening trial may be evaluated in terms of excess mortality, in which case no patient-specific information on causes of death is needed. We studied the effect of not accounting for attendance on the calculated excess mortality in a prostate cancer screening trial. **Methods** The numerator of the excess mortality rate related to prostate cancer diagnoses in each study arm equals the excess number of deaths observed in the cancer patients. The estimation of the expected number of deaths in the absence of the prostate cancer diagnoses has to account for the self-selection of those participating in the trial, particularly if the proportion of non-participants is substantial. **Setting** The European prostate cancer screening trial (ERSPC). **Results** In the screening arm, non-attendees had roughly twice the mortality rate of attendees. Approximately twice as many cancers were detected in the screening arm compared with the control arm, primarily in attendees. Unless attendance is properly accounted for, the expected mortality of prostate cancer patients in the screening arm is overestimated by 0.9-3.6 deaths per 1000 person-years. **Conclusions** Attendees have a lower all-cause mortality rate (are healthier) and a higher probability of a prostate cancer diagnosis than non-attendees and the men randomized to the control arm. If attendance is not accounted for, the excess mortality and the between-arm excess mortality rate ratio are underestimated and screening is considered more effective than it actually is. These effects may be sizeable, notably if non-attendance is common. Correcting for attendance status is important in the calculation of the excess mortality rate in prostate cancer patients that can be used in conjunction with a disease-specific mortality analysis in a randomized controlled cancer screening trial.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Comprehensive Cancer Center the Netherlands (IKNL), Erasmus University Medical Center, Finnish Cancer Registry, Sahlgrenska University Hospital, Tampere University Hospital, The Department of Diagnostic Medical Imaging, Institute for Cancer Prevention, Evaluation Unit

Contributors: Kranse, R., van Leeuwen, P. J., Hakulinen, T., Hugosson, J., Tammela, T. L., Ciatto, S., Roobol, M. J., Zappa, M., Aus, G., Bangma, C. H., Moss, S. M., Auvinen, A., Schroder, F. H.

Number of pages: 7

Pages: 39-45

Publication date: 2013

Peer-reviewed: Yes

### Publication information

Journal: JOURNAL OF MEDICAL SCREENING

Volume: 20

Issue number: 1

ISSN (Print): 0969-1413

Ratings:

Scopus rating (2013): CiteScore 4.6 SJR 1.766 SNIP 1.121

Original language: English

ASJC Scopus subject areas: Health Policy, Public Health, Environmental and Occupational Health

DOIs:

10.1177/0969141312474443

URLs:

<http://www.scopus.com/inward/record.url?scp=84890161301&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84890161301

Research output: Contribution to journal › Article › Scientific › peer-review

### Eye Lens Opacities Among Physicians Occupationally Exposed to Ionizing Radiation

We compared the frequency of lens opacities among physicians with and without occupational exposure to ionizing radiation, and estimated dose-response between cumulative dose and opacities. We conducted ophthalmologic examinations of 21 physicians with occupational exposure to radiation and 16 unexposed physicians. Information on cumulative radiation doses (mean 111 mSv) was based on dosimeter readings recorded in a national database on occupational exposures. Lens changes were evaluated using the Lens Opacities Classification System II, with an emphasis on posterior subcapsular (PSC) and cortical changes. Among the exposed physicians, the prevalences of cortical and PSC changes were both 11% (3/21), and the corresponding frequencies in the unexposed group were 44% (n = 7) and 6% (n = 1). For dose-response analysis, the data were pooled with 29 exposed physicians from our previous study. No association of either type of lens changes with cumulative recorded dose was observed. Our findings do not indicate an increased frequency of lens opacities in physicians with occupational exposure to ionizing radiation. However, the subjects in this study have received relatively low doses and therefore the results do not exclude small increases in lens opacities or contradict the studies reporting increases among interventional cardiologists with materially higher cumulative doses.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), School of Management (JKK), University of Helsinki, STUK - Radiation and Nuclear Safety Authority, Helsinki University Central Hospital

Contributors: Auvinen, A., Kivelä, T., Heinävaara, S., Mrena, S.

Number of pages: 4

Pages: 945-948

Publication date: 22 May 2014

Peer-reviewed: Yes

### Publication information

Journal: Annals of Occupational Hygiene

Volume: 59

Issue number: 7

ISSN (Print): 0003-4878

Ratings:

Scopus rating (2014): CiteScore 3.6 SJR 1.047 SNIP 1.556

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Medicine(all)

Keywords: Cataract, Crystalline, Exposure, Occupational, Radiation effects, Radiation protection, Radiology

DOIs:

10.1093/annhyg/mev022

URLs:

<http://www.scopus.com/inward/record.url?scp=84939620244&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84939620244

Research output: Contribution to journal › Article › Scientific › peer-review

### **Fatal childhood injuries in Finland, 1971-2010**

**Background** Childhood injuries are a major public health problem worldwide, injuries being the leading cause of death and disability from early childhood through adolescence. **Objective** To examine the 40-year nationwide trends in the number and incidence of fatal injuries among children aged 0e14 years in Finland, a country with a white European population of 5.3 million. **Methods** Data were obtained from the Official Cause-of- Death Statistics of Finland during 1971e2010. The main categories for unintentional injury deaths were road traffic injury, water traffic injury, falls, drowning and poisoning. For intentional injury deaths, the main categories were suicide and homicide. **Results** In 1971, there were 109 fatal injuries involving girls and 207 involving boys, and in 2010, these numbers were 10 and 16. The corresponding incidence rates (per 100 000 children per year) were 20.1 and 2.3 (girls), and 36.7 and 3.5 (boys). The reduction in fatal injuries was mostly due to fewer unintentional injuries. The greatest decline occurred in the number of fatal motor vehicle injuries: from 57 (girls) and 92 (boys) in 1971 to 5 (girls) and 2 (boys) in 2010. Drownings followed a similar pattern. Violence-related deaths also showed a decreasing trend. In 1971, there were 14 intentional deaths in girls and 15 in boys, while in 2010 these numbers were 0 and 3, respectively. **Conclusions** This nationwide study confirms a decline in childhood injury deaths over the last four decades, with the greatest declines occurring in the number of fatal motor vehicle injuries, drownings and intentional injuries.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Pirkanmaan sairaanhoitopiiri, Tampere University Hospital, UKK Institute Finland

Contributors: Parkkari, J., Mattila, V., Kivistö, J., Niemi, S., Palvanen, M., Kannus, P.

Number of pages: 6

Pages: 171-176

Publication date: Jun 2013

Peer-reviewed: Yes

### **Publication information**

Journal: INJURY PREVENTION

Volume: 19

Issue number: 3

ISSN (Print): 1353-8047

Ratings:

Scopus rating (2013): CiteScore 2.8 SJR 0.703 SNIP 1.236

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

DOIs:

10.1136/injuryprev-2012-040387

URLs:

<http://www.scopus.com/inward/record.url?scp=84878013683&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84878013683

Research output: Contribution to journal > Article > Scientific > peer-review

### **HPLC-SEC: a new approach to characterise complex wastewater effluents**

This work investigates the use of HPLC-SEC to characterise dissolved organic matter (DOM) of complex wastewater effluents. A silica-based column, sodium acetate eluent and multiple detections were employed: UV-254 absorbance for humic-type, and tryptophan-like (Ex/Em = 270/355) and tyrosine-like (Ex/Em = 270/310) fluorescence for protein type compounds. Effects of eluent pH, eluent ionic strength and injection volume on separation efficiency were tested. Humic-type and protein-type fractions were clearly differentiated and eluted within and out of calibration range. Eluent ionic strength had the greatest influence on global resolution; the lowest eluent concentration of 0.01 M produced the best separation for all wastewater effluents tested at any detection. UV-254 absorbance was higher at neutral and basic eluent pH while tryptophan-like fluorescence depended on the sample composition rather than on the eluent pH or ionic strength. Tyrosine-like fluorescence decreased significantly with the increase of eluent ionic strength. Accurate molecular weight measurements could not be done, the separation being influenced by secondary interactions, but could be approximated using separate calibrations with sodium salts of polystyrene-sulfonates and protein standards. The results show that this method is suitable for determining DOM in wastewater at low eluent concentrations (up to 0.03 M), at neutral or slightly basic pH.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Chemistry and Bioengineering, Degree Programme in Energy and Environmental Engineering, Tampere University of Applied Sciences, Department of Biological and Environmental Science, University of

Jyväskylä

Contributors: Szabo, H. M., Lepistö, R., Tuhkanen, T.

Number of pages: 14

Pages: 257-270

Publication date: 19 Feb 2016

Peer-reviewed: Yes

### Publication information

Journal: International Journal of Environmental Analytical Chemistry

Volume: 96

Issue number: 3

ISSN (Print): 0306-7319

Ratings:

Scopus rating (2016): CiteScore 2.5 SJR 0.368 SNIP 0.501

Original language: English

ASJC Scopus subject areas: Analytical Chemistry, Environmental Chemistry, Soil Science, Health, Toxicology and Mutagenesis, Pollution, Waste Management and Disposal, Water Science and Technology, Public Health, Environmental and Occupational Health

Keywords: DOM, Fluorescence, greywater, humic, ionic strength, proteins, tryptophan, UV-254

DOIs:

10.1080/03067319.2016.1150463

### Bibliographical note

EXT="Tuhkanen, Tuula"

Source: Scopus

Source ID: 84961206778

Research output: Contribution to journal > Article > Scientific > peer-review

### Impact loading history modulates hip fracture load and location: A finite element simulation study of the proximal femur in female athletes

Sideways falls impose high stress on the thin superolateral cortical bone of the femoral neck, the region regarded as a fracture-prone region of the hip. Exercise training is a natural mode of mechanical loading to make bone more robust. Exercise-induced adaptation of cortical bone along the femoral neck has been previously demonstrated. However, it is unknown whether this adaption modulates hip fracture behavior. The purpose of this study was to investigate the influence of specific exercise loading history on fall-induced hip fracture behavior by estimating fracture load and location with proximal femur finite element (FE) models created from magnetic resonance images (MRI) of 111 women with distinct exercise histories: 91 athletes (aged 24.7±6.1 years, >8 years competitive career) and 20 women as controls (aged 23.7±3.8 years). The athletes were divided into five groups based on typical loading patterns of their sports: high-impact (H-I: 9 triple-jumpers and 10 high jumpers), odd-impact (O-I: 9 soccer and 10 squash players), high-magnitude (H-M: 17 power-lifters), repetitive-impact (R-I: 18 endurance runners), and repetitive non-impact (R-NI: 18 swimmers). Compared to the controls, the H-I, O-I, and R-I groups had significantly higher (11–26%,  $p < 0.05$ ) fracture loads. Also, the fracture location in the H-I and O-I groups was significantly more proximal (7–10%) compared to the controls. These results suggest that an exercise loading history of high impacts, impacts from unusual directions, or repetitive impacts increases the fracture load and may lower the risk of fall-induced hip fracture.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Faculty of Biomedical Sciences and Engineering, Research group: Computational Biophysics and Imaging Group, UKK Institute for Health Promotion Research, Jyväskylän yliopisto, Jyväskylä Central Hospital, GeroCenter Foundation, GeroCenter Foundation for Aging Research and Development

Contributors: Abe, S., Narra Girish, N., Nikander, R., Hyttinen, J., Kouhia, R., Sievänen, H.

Number of pages: 8

Pages: 136-143

Publication date: 25 Jul 2018

Peer-reviewed: Yes

### Publication information

Journal: Journal of Biomechanics

Volume: 76

ISSN (Print): 0021-9290

Ratings:

Scopus rating (2018): CiteScore 4.7 SJR 1.149 SNIP 1.429

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Biomedical Engineering

Keywords: Bone strength, finite element modeling, Exercise, falling, femoral neck

DOIs:

10.1016/j.jbiomech.2018.05.037

### Bibliographical note

EXT="Sievänen, Harri"

Research output: Contribution to journal › Article › Scientific › peer-review

### Impacts of a population-based prostate cancer screening programme on excess total mortality rates in men with prostate cancer: A randomized controlled trial

**Objectives** To assess the effect of screening in terms of excess mortality in the European Randomized Study of Screening for Prostate Cancer (ERSPC). **Methods** A total of 141,578 men aged 55-69 were randomized to systematic screening or usual care in ERSPC sections in Finland, Italy, the Netherlands and Sweden. The excess number of deaths was defined as the difference between the observed number of deaths in the prostate cancer (PC) patients and the expected number of deaths up to 31 December 2006. The expected number was derived from mortality of all study participants before a diagnosis with PC adjusted for study centre, study arm and study attendance. The excess mortality rates were compared between the two study arms. **Results** The PC incidence was 9.25 per 1000 person-years in the intervention arm and 5.49 per 1000 person-years in the control arm, relative risk (RR) 1.69 (95% confidence interval [CI] 1.62-1.76). The excess mortality among men with PC was 0.29 per 1000 person-years in the intervention arm and 0.37 per 1000 person-years in the control arm; the RR for excess mortality was 0.77 (95% CI 0.55-1.08). The absolute risk reduction in the excess mortality was 0.08 per 1000 person-years. The overall mortality was not significantly different between the intervention and the control arms of the study: RR 0.99 (95% CI 0.96-1.01). **Conclusions** Although the reduction in excess mortality was not statistically significant, the between-arm reduction in excess mortality rate was in line with the previously reported 20% reduction in the disease-specific mortality. This finding indicates that the reduction in PC mortality in the ERSPC trial cannot be due to a bias in cause of death adjudication.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

**Organisations:** Prostate cancer research center (PCRC), Erasmus University Medical Center, Comprehensive Cancer Center the Netherlands (IKNL), Finnish Cancer Registry, Sahlgrenska Academy, Tampere University Hospital, The Department of Diagnostic Medical Imaging, Institute for Cancer Prevention, Cancer Screening Evaluation Unit, Tampere School of Public Health

**Contributors:** van Leeuwen, P. J., Kranse, R., Hakulinen, T., Hugosson, J., Tammela, T. L., Ciatto, S., Roobol, M. J., Zappa, M., De Koning, H. J., Bangma, C. H., Moss, S. M., Auvinen, A., Schroder, F. H.

Number of pages: 6

Pages: 33-38

Publication date: 2013

Peer-reviewed: Yes

### Publication information

Journal: JOURNAL OF MEDICAL SCREENING

Volume: 20

Issue number: 1

ISSN (Print): 0969-1413

Ratings:

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Original language: English

ASJC Scopus subject areas: Health Policy, Public Health, Environmental and Occupational Health

DOIs:

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URLs:

<http://www.scopus.com/inward/record.url?scp=84890184068&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84890184068

Research output: Contribution to journal › Article › Scientific › peer-review

### Lens opacities among physicians occupationally exposed to ionizing radiation - a pilot study in Finland

**Objectives** The aim of this study was to estimate the prevalence of lens opacities among physicians occupationally exposed to radiation overall and by occupational factors and to assess the feasibility of a large-scale study for risk assessment. **Methods** Based on a nationwide registry of 1312 physicians, mostly radiologists with occupational exposure to ionizing radiation, 120 subjects were invited to participate, of which 59 (49%) consented. The inclusion criteria included (i) age 45-70 years, (ii) cumulative recorded radiation dose >10 mSv, and (iii) duration of work with dose monitoring >15 years. The participants completed a questionnaire regarding occupational history and other risk factors for lens opacities. A full ophthalmological examination was performed. Lenticular changes were graded using the Lens Opacities

Classification System, version II (LOCS II), and the Nidek EAS-1000 Scheimpflug slit-imaging videophotography system. Results Lens opacities were detected in 42% [95% confidence interval (95% CI) 29-55] of the 57 physicians without prior cataract surgery. Nuclear opacities were found in 14% (95% CI 6-26), cortical in 7% (95% CI 2-17), and posterior subcapsular in 5% (95% CI 1-15) of the subjects. The prevalence of lens opacities increased with age, smoking, and cumulative recorded radiation dose. After controlling for age, gender, and smoking, the excess odds ratio for any lens opacity was 0.13 (95% CI -0.02-0.28) per 10 mSv of cumulative radiation dose. Conclusions Our preliminary results show cortical and posterior subcapsular lens opacities among physicians exposed to occupational radiation, consistent with recent studies on low-dose radiation exposure. A full study with an unexposed reference group for risk estimation is warranted.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Helsinki University Central Hospital, STUK - Radiation and Nuclear Safety Authority

Contributors: Mrena, S., Kivelä, T., Kurttio, P., Auvinen, A.

Number of pages: 7

Pages: 237-243

Publication date: May 2011

Peer-reviewed: Yes

#### Publication information

Journal: SCANDINAVIAN JOURNAL OF WORK ENVIRONMENT AND HEALTH

Volume: 37

Issue number: 3

ISSN (Print): 0355-3140

Ratings:

Scopus rating (2011): CiteScore 4.4 SJR 1.172 SNIP 1.315

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: Cataract, Crystalline, Exposure, Occupational, Radiation effects, Radiation protection, Radiology

DOIs:

10.5271/sjweh.3152

URLs:

<http://www.scopus.com/inward/record.url?scp=79957633305&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79957633305

Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

#### Mortality from cancer and other causes in commercial airline crews: A joint analysis of cohorts from 10 countries

Background: Commercial airline crew is one of the occupational groups with the highest exposures to ionising radiation. Crew members are also exposed to other physical risk factors and subject to potential disruption of circadian rhythms. Methods: This study analyses mortality in a pooled cohort of 93 771 crew members from 10 countries. The cohort was followed for a mean of 21.7 years (2.0 million person-years), during which 5508 deaths occurred. Results: The overall mortality was strongly reduced in male cockpit (SMR 0.56) and female cabin crews (SMR 0.73). The mortality from radiation-related cancers was also reduced in male cockpit crew (SMR 0.73), but not in female or male cabin crews (SMR 1.01 and 1.00, respectively). The mortality from female breast cancer (SMR 1.06), leukaemia and brain cancer was similar to that of the general population. The mortality from malignant melanoma was elevated, and significantly so in male cockpit crew (SMR 1.57). The mortality from cardiovascular diseases was strongly reduced (SMR 0.46). On the other hand, the mortality from aircraft accidents was exceedingly high (SMR 33.9), as was that from AIDS in male cabin crew (SMR 14.0). Conclusions: This large study with highly complete follow-up shows a reduced overall mortality in male cockpit and female cabin crews, an increased mortality of aircraft accidents and an increased mortality in malignant skin melanoma in cockpit crew. Further analysis after longer follow-up is recommended.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Registre Morphologique des Tumeurs, STUK - Radiation and Nuclear Safety Authority, London School of Hygiene and Tropical Medicine, National Institute for Occupational Safety and Health, Copenhagen University Hospital, Cancer Registry of Norway Institute of Population-Based Cancer Research, Karolinska Institutet, Istituto Superiore di Sanita, Karolinska Institute, Finnish Cancer Registry, University of Iceland, Danish Cancer Society Research Center, Norwegian Armed Forces Medical Services, Institute of Aviation Medicine, University of Athens, Leibniz Institute for Prevention Research and Epidemiology - BIPS, University Medical Centre Mainz  
Contributors: Hammer, G. P., Auvinen, A., De Stavola, B. L., Grajewski, B., Gundestrup, M., Haldorsen, T., Hammar, N., Lagorio, S., Linnertsjö, A., Pinkerton, L., Pukkala, E., Rafnsson, V., Dos-Santos-Silva, I., Storm, H. H., Strand, T. E., Tzonou, A., Zeeb, H., Blettner, M.

Number of pages: 10  
Pages: 313-322  
Publication date: 2014  
Peer-reviewed: Yes

#### Publication information

Journal: OCCUPATIONAL AND ENVIRONMENTAL MEDICINE

Volume: 71

Issue number: 5

ISSN (Print): 1351-0711

Ratings:

Scopus rating (2014): CiteScore 6.4 SJR 1.681 SNIP 1.78

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

DOIs:

10.1136/oemed-2013-101395

URLs:

<http://www.scopus.com/inward/record.url?scp=84898546641&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84898546641

Research output: Contribution to journal › Article › Scientific › peer-review

#### Multiple approaches and participation rate for a community based smoking cessation intervention trial in rural Kerala, India

**Background:** To illustrate multiple approaches and to assess participation rates adopted for a community based smoking cessation intervention programme in rural Kerala. **Materials and Methods:** Resident males in the age group 18-60 years who were 'current daily smokers' from 4 randomly allocated community development blocks of rural Thiruvananthapuram district, Kerala (2 intervention and 2 control groups) were selected. Smoking status was assessed through house-to-house survey using trained volunteers. Multiple approaches included awareness on tobacco hazards during baseline survey and distribution of multicolour anti-tobacco leaflets for intervention and control groups. Further, the intervention group received a tobacco cessation booklet and four sessions of counselling which included a one-time group counselling cum medical camp, followed by proactive counselling through face-to-face (FTF) interview and mobile phone. In the second and fourth session, motivational counselling was conducted. **Results:** Among 928 smokers identified, smokers in intervention and control groups numbered 474 (mean age: 44.6 years, SD: 9.66 years) and 454 respectively (44.5 years, SD: 10.30 years). Among the 474 subjects, 75 (16%) had attended the group counselling cum medical camp after completion of baseline survey in the intervention group, Among the remaining subjects (n=399), 88% were contacted through FTF and mobile phone (8.5%). In the second session (4-6 weeks time period), the response rate for individual counselling was 94% (78% through FTF and 16% through mobile phone). At 3 months, 70.4% were contacted by their mobile phone and further, 19.6% through FTF (total 90%) while at 6 months (fourth session), the response rate was 74% and 16.4% for FTF and mobile phone respectively, covering 90.4% of the total subjects. Overall, in the intervention group, 97.4% of subjects were being contacted at least once and individual counselling given. **Conclusion:** Proactive community centred intervention programmes using multiple approaches were found to be successful to increase the participation rate for intervention.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Regional Cancer Centre India, National Institute of Health and Welfare (THL)

Contributors: Jayakrishnan, R., Mathew, A., Uutela, A., Auvinen, A., Sebastian, P.

Number of pages: 6

Pages: 2891-2896

Publication date: 2013

Peer-reviewed: Yes

#### Publication information

Journal: ASIAN PACIFIC JOURNAL OF CANCER PREVENTION

Volume: 14

Issue number: 5

ISSN (Print): 1513-7368

Ratings:

Scopus rating (2013): CiteScore 1.9 SJR 0.425 SNIP 0.693

Original language: English

ASJC Scopus subject areas: Epidemiology, Oncology, Public Health, Environmental and Occupational Health, Cancer Research

Keywords: Cessation, Counselling, Face-to-Face (FTF), Smoking

DOIs:



10.7314/APJCP.2013.14.5.2891

URLs:

<http://www.scopus.com/inward/record.url?scp=84880347929&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84880347929

Research output: Contribution to journal > Article > Scientific > peer-review

### **Occupational exposure to electric and magnetic fields during tasks at ground or floor level at 110 kV substations in Finland**

The aim was to investigate occupational exposure to electric and magnetic fields during tasks at ground or floor level at 110 kV substations in Finland and to compare the measured values to Directive 2013/35/EU. Altogether, 347 electric field measurements and 100 magnetic field measurements were performed. The average value of all electric fields was 2.3 kV/m (maximum 6.4 kV/m) and that of magnetic fields was 5.8  $\mu$ T (maximum 51.0  $\mu$ T). It can be concluded that the electric and magnetic field exposure at ground or floor level is typically below the low action levels of Directive 2013/35/EU. The transposition of the directive will not create new needs to modify the work practice of the evaluated tasks, which can continue to be performed as before. However, for workers with medical implants, the exposure may be high enough to cause interference.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Environmental Health, Työterveyslaitos

Contributors: Korpinen, L., Pääkkönen, R.

Number of pages: 5

Pages: 1-5

Publication date: 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Occupational Safety and Ergonomics

Volume: 22

Issue number: 3

ISSN (Print): 1080-3548

Ratings:

Scopus rating (2016): CiteScore 1 SJR 0.261 SNIP 0.798

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Safety, Risk, Reliability and Quality, Safety Research

Keywords: electric fields, exposure, magnetic fields, substations

DOIs:

10.1080/10803548.2016.1153858

Source: Scopus

Source ID: 84965075914

Research output: Contribution to journal > Article > Scientific > peer-review

### **Occurrence of violence among 12-18-year-old adolescents in 1999 and 2009 in Finland**

We examined whether the occurrence of violence changed among Finnish adolescents between 1999 and 2009. The study was based on the nationwide Adolescent Health and Lifestyle Survey from samples of 12- to 18-year-olds. The number of respondents was 8136 in 1999 and 5516 in 2009. The proportion of adolescents reporting violence was 7.9% in 1999 and 6.2% in 2009 ( $P < 0.000$ ). In both of the study years, the violence occurrence rate varied by age and sex, with boys reporting higher rates in all age groups. The results did not support our hypothesis of a general increase in violence among adolescents.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), National Research Institute of Legal Policy, Tampere University Hospital

Contributors: Lindfors, P. L., Kivivuori, J. K., Mattila, V. M., Rimpelä, A. H.

Number of pages: 2

Pages: 699-700

Publication date: Aug 2013

Peer-reviewed: Yes

### Publication information

Journal: EUROPEAN JOURNAL OF PUBLIC HEALTH

Volume: 23

Issue number: 4

ISSN (Print): 1101-1262

Ratings:

Scopus rating (2013): CiteScore 3.8 SJR 1.142 SNIP 1.254

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Medicine(all)

DOIs:

10.1093/eurpub/ckt050

URLs:

<http://www.scopus.com/inward/record.url?scp=84880853514&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84880853514

Research output: Contribution to journal › Article › Scientific › peer-review

### Prostate cancer screening: A survey of attitudes and practices among finnish physicians in 1999 and 2007

**Objective** To evaluate the attitudes and practices related to prostate-specific antigen (PSA) screening for prostate cancer (PC) among Finnish physicians in 1999 and 2007. **Materials and methods** The first questionnaire survey was conducted in 1999 with a mailing to 102 urologists, 679 community physicians and 684 occupational health physicians identified from the membership files of three medical associations. The area of residence was divided into the study area of the Finnish PC screening trial and the rest of Finland. The second survey was carried out in 2007 targeting 168 urologists, 1039 community physicians and 938 occupational health physicians. **Results** The response proportion was 48% in 1999 and 50% in 2007. In both rounds, urologists regarded PC as a more important public health issue than other physicians. On the other hand, the non-urologists considered early diagnosis and screening more important than the urologists. PC was rated by all physicians as a less important public health problem in 2007 than in 1999. A smaller proportion of urologists found routine PSA testing indicated for asymptomatic men, compared with other physicians (40% versus 74-60% in 1999,  $P < 0.001$  and 35% versus 44-37% in 2007,  $P = 0.005$ ). The proportion of physicians reporting regular PSA screening in asymptomatic men was reduced from 1999 to 2007 (from 18% to 9%,  $P < 0.0001$ ). **Conclusion** Based on reported practices of Finnish urologists, community physicians and occupational health physicians, popularity of PSA testing declined between 1999 and 2007. Urologists found PSA testing among asymptomatic men justified less frequently than the other physicians.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Tampere University Hospital, Helsinki University Central Hospital, School of Management (JKK), Finnish Cancer Registry, Tampere School of Public Health

Contributors: Pogodin-Hannolainen, D., Juusela, H., Tammela, T. L. J., Ruutu, M., Aro, J., Määttänen, L., Auvinen, A.

Number of pages: 4

Pages: 46-49

Publication date: Mar 2011

Peer-reviewed: Yes

### Publication information

Journal: JOURNAL OF MEDICAL SCREENING

Volume: 18

Issue number: 1

ISSN (Print): 0969-1413

Ratings:

Scopus rating (2011): CiteScore 2.8 SJR 0.784 SNIP 0.894

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Health Policy

DOIs:

10.1258/jms.2010.010090

URLs:

<http://www.scopus.com/inward/record.url?scp=79955623063&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 79955623063

Research output: Contribution to journal › Article › Scientific › peer-review

## **Ranking of human risk assessment models for manufactured nanomaterials along the Cooper stage-gate innovation funnel using stakeholder criteria**

The current work describes the interaction with various stakeholder groups to establish consensus on stage-gate specific criteria that human risk assessment (HRA) models for manufactured nanomaterials (MN) need to comply with. During the decisive steps in the innovation process, which can be described in a simplified way as stage-gates, it is decided that an innovation makes it either to launch, or is cancelled during one of these stages. However, at present, it is unknown which current HRA models for MN, can assist in this decision making process and to which extent refinements of these models are needed. To accomplish these goals, several steps were performed: (1) the development of criteria for risk assessment along stage-gates; (2) the active involvement of stakeholders and possible end-users to assign values to these criteria; (3) the inventory, selection and assessment of HRA models according to the developed criteria; (4) the matching of the HRA models to the criteria, assessed by the stakeholders, in order to propose a ranking of existing models and (5) exploration of the model mismatches with stage-gate specific criteria and discussion of current model limitations. The assessment led to a ranking of the models for each of the stage-gates. Two HRA models appeared to be predominantly applicable for all stage-gates, namely the NanoSafer CB and the GUIDEnano tool, where NanoSafer CB scored highest for stage 2 and 3 (scoping and business case) and GUIDEnano tool for stage 4–7 (R&D, testing and validation, launch and monitoring). NanoSafer CB only covers occupational human health. LICARA nanoSCAN scored high for the earlier stages (stage 2, 3 and 4) and scored less for the later stages. RiskofDerm was listed for all stages except stage 3 and 7. ECETOC TRA was represented in stages 3–7, and Stoffenmanager (nano), EGRET2 and ART were applicable for one or two stages. Based on these results, it was possible to prioritize Nanosafer CB, GUIDEnano, RiskofDerm, LICARA nanoSCAN and Stoffenmanager Nano. Of these five models, limitations consisted of e.g. expertise required to use the model, interpretation of the data, quality assessment of the input parameters, consideration of different endpoints and populations (such as children, workers, consumers). Practically, this work provides a prioritization for end users of useful models, among the plethora of different models available, towards HRA of MN. Further, it identifies suggestions for future model improvements, enabling the ultimate practical application in the decision making process during the development of MN or MN containing products.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Physics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group, TNO, STL Group, National Institute for Public Health and the Environment, National Research Centre for the Working Environment (NRCWE), Gaiker, TEMAS, Työterveyslaitos, Työterveyslaitos

Contributors: Franken, R., Heringa, M. B., Oosterwijk, T., Dal Maso, M., Fransman, W., Kanerva, T., Liguori, B., Poikkimäki, M., Rodriguez-Llopis, I., Säämänen, A., Stockmann-Juvala, H., Suarez-Merino, B., Alstrup Jensen, K., Stierum, R.

Number of pages: 18

Publication date: 2020

Peer-reviewed: Yes

Early online date: 2019

### **Publication information**

Journal: NanolImpact

Volume: 17

Article number: 100191

ISSN (Print): 2452-0748

Original language: English

ASJC Scopus subject areas: Materials Science (miscellaneous), Safety, Risk, Reliability and Quality, Safety Research, Public Health, Environmental and Occupational Health

Keywords: Human risk assessment models, manufactured nanomaterials, ranking of models, stakeholder assessment, stakeholder criteria

DOIs:

10.1016/j.impact.2019.100191

### **Bibliographical note**

EXT="Kanerva, Tomi"

EXT="Säämänen, Arto"

Source: Scopus

Source ID: 85075493839

Research output: Contribution to journal › Article › Scientific › peer-review

## **Reply to state of the art in research into the risk of low dose radiation exposure**

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), STUK - Radiation and Nuclear Safety Authority, Queen's University, Belfast, Northern Ireland, German Research Center for Environmental Health, Stockholm University, BfS,

CEA, Fontenay-aux-Roses, IRSN Institut de Radioprotection et de Surete Nucleaire, Nuclear Research Centre, PTB  
Contributors: Salomaa, S., Prise, K. M., Atkinson, M. J., Wojcik, A., Auvinen, A., Grosche, B., Sabatier, L., Jourdain, J. R.,  
Salminen, E., Baatout, S., Kulka, U., Rabus, H., Blanchardon, E., Averbeck, D., Weiss, W.

Number of pages: 2

Pages: 259-260

Publication date: Mar 2014

Peer-reviewed: Yes

### Publication information

Journal: JOURNAL OF RADIOLOGICAL PROTECTION

Volume: 34

Issue number: 1

ISSN (Print): 0952-4746

Ratings:

Scopus rating (2014): CiteScore 1.9 SJR 0.565 SNIP 1.075

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Waste Management and Disposal,  
Medicine(all)

DOIs:

10.1088/0952-4746/34/1/L01

URLs:

<http://www.scopus.com/inward/record.url?scp=84896748050&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84896748050

Research output: Contribution to journal › Letter › Scientific › peer-review

### Risk factors for skin cancer among finnish airline cabin crew

Increased incidence of skin cancers among airline cabin crew has been reported in several studies. We evaluated whether the difference in risk factor prevalence between Finnish airline cabin crew and the general population could explain the increased incidence of skin cancers among cabin crew, and the possible contribution of estimated occupational cosmic radiation exposure. A self-administered questionnaire survey on occupational, host, and ultraviolet radiation exposure factors was conducted among female cabin crew members and females presenting the general population. The impact of occupational cosmic radiation dose was estimated in a separate nested case-control analysis among the participating cabin crew (with 9 melanoma and 35 basal cell carcinoma cases). No considerable difference in the prevalence of risk factors of skin cancer was found between the cabin crew (N = 702) and the general population subjects (N = 1007) participating the study. The mean risk score based on all the conventional skin cancer risk factors was 1.43 for cabin crew and 1.44 for general population (P = 0.24). Among the cabin crew, the estimated cumulative cosmic radiation dose was not related to the increased skin cancer risk [adjusted odds ratio (OR) = 0.75, 95% confidence interval (CI): 0.57-1.00]. The highest plausible risk of skin cancer for estimated cosmic radiation dose was estimated as 9% per 10 mSv. The skin cancer cases had higher host characteristics scores than the non-cases among cabin crew (adjusted OR = 1.43, 95% CI: 1.01-2.04). Our results indicate no difference between the female cabin crew and the general female population in the prevalence of factors generally associated with incidence of skin cancer. Exposure to cosmic radiation did not explain the excess of skin cancer among the studied cabin crew in this study.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Pirkanmaan sairaanhoitopiiri, Finnish Cancer Registry

Contributors: Kojo, K., Helminen, M., Pukkala, E., Auvinen, A.

Number of pages: 10

Pages: 695-704

Publication date: Jul 2013

Peer-reviewed: Yes

### Publication information

Journal: Annals of Occupational Hygiene

Volume: 57

Issue number: 6

ISSN (Print): 0003-4878

Ratings:

Scopus rating (2013): CiteScore 3.5 SJR 0.987 SNIP 1.343

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: case-control studies, cosmic radiation, occupational exposure, skin neoplasms, ultraviolet rays

DOIs:

10.1093/annhyg/mes106

URLs:

<http://www.scopus.com/inward/record.url?scp=84880995488&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84880995488

Research output: Contribution to journal > Article > Scientific > peer-review

### **Scanner abdominal: Étude comparative de l'exposition patient en routine clinique sur des appareils avec et sans reconstruction itérative**

**Objective:** compare the dose delivered to patients and image quality in clinical routine to perform an abdominal CT scan with no iterative reconstruction techniques (IR) relative to an examination conducted on a scanner with IR. **Materials and methods:** this is a retrospective study of 30 patients who underwent two abdominal examinations: one on a 40-slice scanner (TDM40) without IR and another one on a 256-slice scanner with IR (TDM256). The patients, on medical follow-up for a chronic abdominal disease, had an exam on each scanner using the same protocol comprising an abdominopelvic time portal phase. The length of acquisition, the effective dose and the dose length product (DLP) as well as quantitative and qualitative assessments of the image were compared. **Results:** the average effective dose per examination was 17.3 mSv with the TDM40 (PDL: 1019 mGy.cm) against 11.1 mSv with the TDM256 (PDL: 654 mGy.cm), hence a reduction of 35.8% ( $p < 0.001$ ). The length of acquisition and quantification were comparable in both groups. The qualitative assessment was slightly higher on the TDM40 but no examination was considered suboptimal. **Conclusion:** using a scanner equipped with IR significantly reduces the effective dose while maintaining image quality.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Frontier Photonics, Lille University Hospital - CHRU, Univ Lille Nord de France

Contributors: Gomes, M., Leroy, C., Lemaire, S., Marmin, C., Mordon, S., Ernst, O.

Number of pages: 7

Pages: 35-41

Publication date: 2014

Peer-reviewed: Yes

#### **Publication information**

Journal: Radioprotection

Volume: 49

Issue number: 1

ISSN (Print): 0033-8451

Ratings:

Scopus rating (2014): CiteScore 0.5 SJR 0.231 SNIP 0.332

Original language: French

ASJC Scopus subject areas: Nuclear Energy and Engineering, Renewable Energy, Sustainability and the Environment, Public Health, Environmental and Occupational Health, Waste Management and Disposal, Health, Toxicology and Mutagenesis, Safety, Risk, Reliability and Quality

**Keywords:** As low as reasonably achievable (ALARA), Computed tomography, Low doses, Patient dose, Radiation dose  
**DOIs:**

10.1051/radiopro/2013078

URLs:

<http://www.scopus.com/inward/record.url?scp=84905261404&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84905261404

Research output: Contribution to journal > Article > Scientific > peer-review

### **Smoking cessation intervention in Rural Kerala, India: Findings of a randomised controlled trial**

**Background:** Prevalence of tobacco use is higher in the rural than urban areas of India. Unlike tobacco cessation clinics located in urban areas, community-based smoking cessation intervention has the potential to reach a wider section of the community to assist in smoking cessation in the rural setting. The present study aimed to assess the effectiveness of a cessation intervention in rural Kerala state, India. **Materials and Methods:** Current daily smoking resident males in the age group 18-60 years from four community development blocks in rural Kerala were randomly allocated to intervention and control groups. The intervention group received multiple approaches in which priority was given to face-to-face interviews and telephone counselling. Initially educational materials on tobacco hazards were distributed. Further, four rounds of counselling sessions were conducted which included a group counselling with a medical camp as well as individual counselling by trained medical social workers. The control group received general awareness training on tobacco hazards along with an anti-tobacco leaflet. Self-reported smoking status was assessed after 6 and 12 months. Factors associated with tobacco cessation were estimated using binomial regression method. **Results:** Overall prevalence of smoking abstinence was 14.7% in the intervention and 6.8% in the control group (Relative risk: 1.85, 95% CI: 1.05, 3.25). A total of 41.3% subjects in the intervention area and 13.6% in the control area had reduced smoking by 50% or more at the end of

12 months. Lower number of cigarettes/bidi used, low nicotine dependence and consultation with a doctor for a medical ailment were the statistically significant predictors for smoking cessation. Conclusions: Rigorous approaches for smoking cessation programmes can enhance quit rates in smoking in rural areas of India.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), Regional Cancer Centre India, National Public Health Institute

Contributors: Jayakrishnan, R., Uutela, A., Mathew, A., Auvinen, A., Mathew, P. S., Sebastian, P.

Number of pages: 6

Pages: 6797-6802

Publication date: 2013

Peer-reviewed: Yes

#### Publication information

Journal: ASIAN PACIFIC JOURNAL OF CANCER PREVENTION

Volume: 14

Issue number: 11

ISSN (Print): 1513-7368

Ratings:

Scopus rating (2013): CiteScore 1.9 SJR 0.425 SNIP 0.693

Original language: English

ASJC Scopus subject areas: Epidemiology, Oncology, Public Health, Environmental and Occupational Health, Cancer Research

Keywords: Community approach, India, Intervention, Rural Kerala, Smoking cessation

DOIs:

10.7314/APJCP.2013.14.11.6797

URLs:

<http://www.scopus.com/inward/record.url?scp=84892473555&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84892473555

Research output: Contribution to journal > Article > Scientific > peer-review

#### Sports activity and the use of cigarettes and snus among young males in Finland in 1999-2010

**Background:** Studies of the relationship between sports activity and smoking among adolescents and young adults report contradictory results. We examined the association between sports activity (intensity and type of sport) and the current use of snus (Swedish snuff), cigarette smoking, and the combined use of cigarettes and snus (dual use) among young males in Finland. **Methods.** Data were collected from 16,746 male conscripts who completed a survey during the first days of their conscription during the years 1999-2010 (median age 19 years, response rate 95%). Main outcome measures were self-reported daily/occasional use of snus, cigarette smoking, and dual use. The association between sports activity, type of sport, and several sociodemographic background variables was assessed using logistic regression analysis. **Results:** Over the study period (1999-2010), the prevalence of cigarette smoking decreased from 42% to 34%, while snus use increased from 5% to 12%, and dual use increased from 7% to 13% ( $p < 0.001$ ). Compared with no physical activity, regular competitive sports activity (defined as high-intensity sports activity) was positively associated with use of snus (odds ratio [OR] 10.2; 95% confidence interval [CI]: 7.8-13.5) and negatively with cigarette smoking (OR 0.2; 95% CI: 0.1-0.3). When stratified by type of sport in multivariate models, ice hockey was most strongly associated with snus use (OR 1.6; 95% CI: 1.4-1.9) and dual use (OR 2.0; 95% CI 1.8-2.3) compared with those not playing ice-hockey, followed by other team sports for snus use (OR 1.5; 95% CI: 1.3-1.8) and dual use (OR 1.8; 95% CI: 1.6-2.0) compared with those not participating in other team-sports. **Conclusions:** Our results show a clear association between snus use and intensity and type of training. Team sports were associated with increased use of snus and dual use compared with no participation in team sports. These findings should be acknowledged when planning and implementing preventive strategies.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Integrated Technologies for Tissue Engineering Research (ITTE), Centre of Military Medicine

Contributors: Mattila, V. M., Raisamo, S., Pihlajamäki, H., Mäntysaari, M., Rimpelä, A.

Publication date: 2012

Peer-reviewed: Yes

#### Publication information

Journal: BMC Public Health

Volume: 12

Issue number: 1

Article number: 230

ISSN (Print): 1471-2458

Ratings:

Scopus rating (2012): CiteScore 3.4 SJR 1.208 SNIP 1.305

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: Physical activity, Smoking, Snus, Sports, Tobacco use, Young people/youth

DOIs:

10.1186/1471-2458-12-230

URLs:

<http://www.scopus.com/inward/record.url?scp=84858713539&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84858713539

Research output: Contribution to journal › Article › Scientific › peer-review

### **Technology review: prototyping platforms for monitoring ambient conditions**

The monitoring of ambient conditions in indoor spaces is very essential owing to the amount of time spent indoors. Specifically, the monitoring of air quality is significant because contaminated air affects the health, comfort and productivity of occupants. This research work presents a technology review of prototyping platforms for monitoring ambient conditions in indoor spaces. It involves the research on sensors (for CO<sub>2</sub>, air quality and ambient conditions), IoT platforms, and novel and commercial prototyping platforms. The ultimate objective of this review is to enable the easy identification, selection and utilisation of the technologies best suited for monitoring ambient conditions in indoor spaces. Following the review, it is recommended to use metal oxide sensors, optical sensors and electrochemical sensors for IAQ monitoring (including NDIR sensors for CO<sub>2</sub> monitoring), Raspberry Pi for data processing, ZigBee and Wi-Fi for data communication, and ThingSpeak IoT platform for data storage, analysis and visualisation.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Automation and Hydraulic Engineering, Research group: Automation and Systems Theory

Contributors: Afolaranmi, S. O., Ramis Ferrer, B., Martinez Lastra, J. L.

Number of pages: 27

Pages: 253-279

Publication date: 2018

Peer-reviewed: Yes

Early online date: 9 May 2018

### **Publication information**

Journal: International Journal of Environmental Health Research

Volume: 28

Issue number: 3

ISSN (Print): 0960-3123

Ratings:

Scopus rating (2018): CiteScore 2.7 SJR 0.49 SNIP 0.715

Original language: English

ASJC Scopus subject areas: Pollution, Public Health, Environmental and Occupational Health, Health, Toxicology and Mutagenesis

Keywords: ambient conditions monitoring, CO monitoring, indoor air quality, prototyping platforms, Technology review

DOIs:

10.1080/09603123.2018.1468423

Source: Scopus

Source ID: 85046644339

Research output: Contribution to journal › Article › Scientific › peer-review

### **Testing the near field/far field model performance for prediction of particulate matter emissions in a paint factory**

A Near Field/Far Field (NF/FF) model is a well-accepted tool for precautionary exposure assessment but its capability to estimate particulate matter (PM) concentrations is not well studied. The main concern is related to emission source characterization which is not as well defined for PM emitters compared to e.g. for solvents. One way to characterize PM emission source strength is by using the material dustiness index which is scaled to correspond to industrial use by using modifying factors, such as handling energy factors. In this study we investigate how well the NF/FF model predicts PM concentration levels in a paint factory. PM concentration levels were measured during big bag and small bag powder pouring. Rotating drum dustiness indices were determined for the specific powders used and applied in the NF/FF model to predict mass concentrations. Modeled process specific concentration levels were adjusted to be similar to the measured concentration levels by adjusting the handling energy factor. The handling energy factors were found to vary considerably depending on the material and process even though they have the same values as modifying factors in the exposure models. This suggests that the PM source characteristics and process-specific handling energies should be studied in

more detail to improve the model-based exposure assessment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Danmarks Tekniske Universitet, DTU Informatik, Denmark Technical University DTU, National Research Centre for the Working Environment, Department of Micro and Nanotechnology

Contributors: Koivisto, A. J., Jensen, A. C. Ø., Levin, M., Kling, K. I., Maso, M. D., Nielsen, S. H., Jensen, K. A., Koponen, I. K.

Number of pages: 12

Pages: 62-73

Publication date: 1 Jan 2015

Peer-reviewed: Yes

### Publication information

Journal: Environmental Sciences: Processes and Impacts

Volume: 17

Issue number: 1

ISSN (Print): 2050-7887

Ratings:

Scopus rating (2015): CiteScore 4.3 SJR 0.998 SNIP 0.923

Original language: English

ASJC Scopus subject areas: Environmental Chemistry, Public Health, Environmental and Occupational Health, Management, Monitoring, Policy and Law, Medicine(all)

DOIs:

10.1039/c4em00532e

URLs:

<http://www.scopus.com/inward/record.url?scp=84920000979&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

EXT="Koivisto, A. J."

Source: Scopus

Source ID: 84920000979

Research output: Contribution to journal › Article › Scientific › peer-review

### The effectiveness and applicability of different lifestyle interventions for enhancing wellbeing: The study design for a randomized controlled trial for persons with metabolic syndrome risk factors and psychological distress

Background: Obesity and stress are among the most common lifestyle-related health problems. Most of the current disease prevention and management models are not satisfactorily cost-effective and hardly reach those who need them the most. Therefore, novel evidence-based controlled interventions are necessary to evaluate models for prevention and treatment based on self-management. This randomized controlled trial examines the effectiveness, applicability, and acceptability of different lifestyle interventions with individuals having symptoms of metabolic syndrome and psychological distress. The offered interventions are based on cognitive behavioral approaches, and are designed for enhancing general well-being and supporting personalized lifestyle changes. Methods/Design. 339 obese individuals reporting stress symptoms were recruited and randomized to either (1) a minimal contact web-guided Cognitive Behavioral Therapy-based (CBT) intervention including an approach of health assessment and coaching methods, (2) a mobile-guided intervention comprising of mindfulness, acceptance and value-based exercises, (3) a face-to-face group intervention using mindfulness, acceptance and value-based approach, or (4) a control group. The participants were measured three times during the study (pre = week 0, post = week 10, and follow-up = week 36). Psychological well-being, lifestyles and habits, eating behaviors, and user experiences were measured using online surveys. Laboratory measurements for physical well-being and general health were performed including e.g. liver function, thyroid glands, kidney function, blood lipids and glucose levels and body composition analysis. In addition, a 3-day ambulatory heart rate and 7-day movement data were collected for analyzing stress, recovery, physical activity, and sleep patterns. Food intake data were collected with a 48 - hour diet recall interview via telephone. Differences in the effects of the interventions would be examined using multiple-group modeling techniques, and effect-size calculations. Discussion. This study will provide additional knowledge about the effects of three low intensity interventions for improving general well-being among individuals with obesity and stress symptoms. The study will show effects of two technology guided self-help interventions as well as effect of an acceptance and value-based brief group intervention. Those who might benefit from the aforesaid interventions will increase knowledge base to better understand what mechanisms facilitate effects of the interventions. Trial registration. Current Clinical Trials NCT01738256, Registered 17 August, 2012.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Augmented Human Activities (AHA), Jyväskylän yliopisto, Ita-Suomen yliopisto, Institute of Biomedicine, University of Helsinki, Työterveyslaitos, VTT Technical Research Centre of Finland, Duodecim Medical Publications Ltd



Contributors: Lappalainen, R., Sairanen, E., Järvelä, E., Rantala, S., Korpela, R., Puttonen, S., Kujala, U. M., Myllymäki, T., Peuhkuri, K., Mattila, E., Kaipainen, K., Ahtinen, A., Karhunen, L., Pihlajamäki, J., Järnefelt, H., Laitinen, J., Kutinlahti, E., Saarelma, O., Ermes, M., Kolehmainen, M.

Publication date: 4 Apr 2014

Peer-reviewed: Yes

#### Publication information

Journal: BMC Public Health

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Article number: 310

ISSN (Print): 1471-2458

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Scopus rating (2014): CiteScore 4.2 SJR 1.429 SNIP 1.471

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Medicine(all)

Keywords: Acceptance and Commitment Therapy, Cognitive behavioral therapy, Lifestyle, Mobile application, Obesity, Stress, Technology-aided interventions, Web-based intervention, Well-being

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Research output: Contribution to journal › Article › Scientific › peer-review

#### The modifying effect of the building envelope on population exposure to PM<sub>2.5</sub> from outdoor sources

A number of studies have estimated population exposure to PM<sub>2.5</sub> by examining modeled or measured outdoor PM<sub>2.5</sub> levels. However, few have taken into account the mediating effects of building characteristics on the ingress of PM<sub>2.5</sub> from outdoor sources and its impact on population exposure in the indoor domestic environment. This study describes how building simulation can be used to determine the indoor concentration of outdoor-sourced pollution for different housing typologies and how the results can be mapped using building stock models and Geographical Information Systems software to demonstrate the modifying effect of dwellings on occupant exposure to PM<sub>2.5</sub> across London. Building archetypes broadly representative of those in the Greater London Authority were simulated for pollution infiltration using EnergyPlus. In addition, the influence of occupant behavior on indoor levels of PM<sub>2.5</sub> from outdoor sources was examined using a temperature-dependent window-opening scenario. Results demonstrate a range of I/O ratios of PM<sub>2.5</sub>, with detached and semi-detached dwellings most vulnerable to high levels of infiltration. When the results are mapped, central London shows lower I/O ratios of PM<sub>2.5</sub> compared with outer London, an apparent inversion of exposure most likely caused by the prevalence of flats rather than detached or semi-detached properties.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: University College London, Public Health England, University of Nottingham

Contributors: Taylor, J., Shrubsole, C., Davies, M., Biddulph, P., Das, P., Hamilton, I., Vardoulakis, S., Mavrogianni, A., Jones, B., Oikonomou, E.

Number of pages: 13

Pages: 639-651

Publication date: 1 Dec 2014

Peer-reviewed: Yes

#### Publication information

Journal: Indoor Air

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ISSN (Print): 0905-6947

Ratings:

Scopus rating (2014): CiteScore 8.1 SJR 1.924 SNIP 2.053

Original language: English

ASJC Scopus subject areas: Environmental Engineering, Building and Construction, Public Health, Environmental and Occupational Health

Keywords: Building stock model, EnergyPlus, Geographical information systems, Indoor air quality, PM

DOIs:

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Source: Scopus

Source ID: 84910047125

Research output: Contribution to journal › Article › Scientific › peer-review

### **The persistence of flood-borne pathogens on building surfaces under drying conditions**

Previous research into microbial persistence on material surfaces following flooding has produced a wide range of results due to differing experimental conditions, including the temperature and humidity conditions of the experimental material and/or surrounding air. However, investigations to identify and quantify these factors and their links to the hygrothermal properties of building materials and the transient environmental conditions are rarely reported. This paper examines the viability of bacterial species on drying material surfaces that have been saturated with water or synthetic sewage. *Escherichia coli* and *Enterococcus faecalis* were inoculated on brick, wood, or plaster and allowed to dry at the conditions intended to mimic the remediation environments commonly found in domestic dwellings following a flood event. The inactivation rates were compared between environmental conditions, water type and the material properties of the surfaces. Significant differences were found in the declines in *E. coli* according to water type, the surface relative humidity and air relative humidity and between drying rates for sewage floods. Simulations using hygrothermal software were performed to illustrate the wide variation in material drying rates under different scenarios, taking into account material size, wall composition, and ventilation. The significantly differing rates of microbial death on flooded building materials under different drying regimes suggest that building simulation models can be useful tools for predicting the level and duration of microbial contamination in buildings following a flood event. A better understanding of microbial survival on drying surfaces can be used to assess the health risks to occupants in flood affected properties.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: University College London

Contributors: Taylor, J., Davies, M., Canales, M., Lai, K. M.

Number of pages: 9

Pages: 91-99

Publication date: 1 Jan 2013

Peer-reviewed: Yes

#### **Publication information**

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ISSN (Print): 1438-4639

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Scopus rating (2013): CiteScore 5.4 SJR 1.175 SNIP 1.411

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health

Keywords: Bacteria, Buildings, Flood, Hygrothermal, Persistence, Surfaces

DOIs:

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Source: Scopus

Source ID: 84870236386

Research output: Contribution to journal › Article › Scientific › peer-review

### **The possibility of decreasing 50-HZ electric field exposure near 400-kV power lines with arc flash personal protective equipment**

Various guidelines for the protection of human beings against possible adverse effects resulting from exposure to electromagnetic fields (EMFs) have been published with a view towards continual improvement; therefore, decreasing exposure is an important research area. The aim of this study was to investigate the possibility of decreasing electric field exposure with arc flash rated personal protective equipment (PPE), which in this case was a set of coveralls, and to compare the measurement results to calculations using the helmet-mask measuring system. We collected the data under a 400-kV power line. The test person stood on isolated aluminum paper, and the current between the ground and the aluminum paper was measured. When the test subject wore the arc flash PPE, the current to the ground was only 9.5% of the current measured when wearing normal clothes, which represents a clear decrease in exposure.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, The Clinical Physiology and Neurophysiology Unit, The North Karelia Central Hospital and Honkalampi Centre, Fingrid Oyj

Contributors: Korpinen, L., Pirkkalainen, H., Heiskanen, T., Pääkkönen, R.

Publication date: 1 Oct 2016

Peer-reviewed: Yes

### Publication information

Journal: International Journal of Environmental Research and Public Health

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Article number: 942

ISSN (Print): 1661-7827

Ratings:

Scopus rating (2016): CiteScore 3.1 SJR 0.853 SNIP 1.071

Original language: English

ASJC Scopus subject areas: Public Health, Environmental and Occupational Health, Health, Toxicology and Mutagenesis

Keywords: Electric field, Exposure, Power lines

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### Bibliographical note

EXT="Korpinen, Leena"

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Source: Scopus

Source ID: 84989225737

Research output: Contribution to journal > Article > Scientific > peer-review

### Validation of exposure assessment and assessment of recruitment methods for a prospective cohort study of mobile phone users (COSMOS) in Finland: A pilot study

Background: The aim of the study was to evaluate the agreement between self-reported and operator-derived estimates of call time based on a three-month monitoring period, as well as the consistency of mobile phone use over time. Alternative approaches to improve participation in a cohort study of mobile phone users were also compared. Methods: A total of 5,400 subjects were identified from network operators' subscriber databases for recruitment to the pilot study. Operator and questionnaire data were used to quantify mobile phone use. Operator data were available for a subset of the subjects for a three-month period in three consecutive years. We also evaluated the effect of the length of the questionnaire and one- or two-phase recruitment on participation. Results: The average response rate for both questionnaires and recruitment procedures was 12%. The response rate was not affected by the length of the questionnaire or the recruitment method. Operator data were available for 83% of the participants for 2007, the first study year. The agreement between self-reported and operator-derived call times decreased with the level of use among intermediate and heavy mobile phone users. During 2007-2009, mobile phone use increased fairly constantly over time. Conclusions: The agreement between self-reported mobile phone use and operator databases was moderate and overestimation of the call time by participants was common. A prospective cohort study would be feasible in Finland, although the potentially low participation rate would increase the resources required for recruitment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Prostate cancer research center (PCRC), STUK - Radiation and Nuclear Safety Authority, Tampere School of Public Health

Contributors: Heinävaara, S., Tokola, K., Kurttio, P., Auvinen, A.

Publication date: 2011

Peer-reviewed: Yes

### Publication information

Journal: Environmental Health: A Global Access Science Source

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Issue number: 1

Article number: 14

Ratings:

Scopus rating (2011): CiteScore 3.9 SJR 1.301 SNIP 1.265

Original language: English

ASJC Scopus subject areas: Health, Toxicology and Mutagenesis, Public Health, Environmental and Occupational Health , Medicine(all)

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Research output: Contribution to journal › Article › Scientific › peer-review