PROCEEDINGS OF THE
XVth Triennial Congress of the
International Ergonomics Association
and
The 7th Joint Conference of
Ergonomics Society of Korea / Japan Ergonomics Society

PROCEEDINGS
Safety and Health

"Ergonomics in the Digital Age"
August 24 - 29, 2003
Seoul, Korea

The Ergonomics Society of Korea
Published by the
Ergonomics Society of Korea
128-8 Yeongeon-dong, Jongno-gu
Seoul, 110-770, Korea
Tel: +82-2-744-7700 (Ext.117), Fax: +82-2-744-9055
E-mail: esk@das.ac.kr
Website: http://www.esk.or.kr
## VOLUME 5 CONTENTS

**SAFETY AND HEALTH**

### MUSCULOSKELETAL DISORDERS

#### MUSCULOSKELETAL DISORDERS I

- Physical Demands Analysis: Review of Selected Peer-Reviewed Methods
  Troy Jones and Shrawan Kumar
  1
- Time Based Job Analysis of Control of Work-Related Musculoskeletal Disorders
  Thomas J. Armstrong, W. Monroe Keyserling, Marissa L. Ebercole, D. Christian Griesheber, and Ei-Wen Lo
  5
- Prevalence of Musculoskeletal Discomfort among Operators in Control Rooms
  Miroslub Grozdanovic and Sonja Pavlovic
  9
- Risk Assessment of Musculoskeletal Disorders Related to Repetitive Work in Automotive Components Industry
  Anabela D. Simões, Pedro Ferreira, Patrícia Miranda, Carlos Fujão, and José Carvalhais
  13
- Back Pain amongst Schoolchildren and Associated Risk Factors
  Sam Murphy, Peter Buckle, and David Stubbs
  16
- Assessing Back Stress in Commercial Crab Fishermen
  Gary A. Mirka, Gwanseob Shin, Kristen Kucera, and Dana Loomis
  21

#### MUSCULOSKELETAL DISORDERS II

- Computer Work Related Shoulder Pain: An Intervention Model
  Roland Kadefors, Leif Sandsjö, Hermie Hermens, Miriam Hutten, Pernilla Bystrom, and Roberto Merletti
  25
- Behavioural Aspects of Developing or Sustaining Neck and Upper Limb Disorders
  Kiem H. Thé, S.G. van den Heuvel, N.M Wijzer, and P. M. Bongers
  29
- Is Computer Mouse Use an Occupational Hazard for the Neck and Upper Limbs?
  Johan H. Andersen
  32
- The Study on Musculoskeletal (Low back & Low extremities) Effects of Heel Types
  Chang - Min Lee and Eun-Hee Jeong
  36
- In-home Assessments of Manual Patient Transfers
  Arun Garg, Kurt Hegmann, and Matthew S. These
  40
- Back Injuries among Swedish and Australian Nursing Personnel
  Inge-Lill V. Engkvist
  44

#### MUSCULOSKELETAL DISORDERS III

- The Relationship Between Musculo-Skeletal Disorders and Work Intensity among Shipyard Workers
  Dong - Mug Kang, Mia Son, Yong-Chul Shin, Sang-Baek Koh, In-Kyung Hwang, Byung-Mann Cho, and Su - Ill Lee
  47
Musculoskeletal Disorder Risk Factors in Pressing Operations of Dry-Cleaning Establishments
JungKeun Park, David H. Wegman, and Laura Punnett

Prevalence of Musculoskeletal Disorders among Workers in the Singapore Hotel Industry and its Relationship with Work Factors
Patrick T.S. Ker and Lea Hock Siang

Risk Factors of Work-Related Musculoskeletal Disorders in Shipyard Workers
Jungwon Kim, Dongmug Kang, Jongeun Kim, Mia Son, Yongchul Shin, and Deoghwan Moon

Work-related Musculoskeletal Disorders (WMSD) Ergonomic Assessment on Foodservice Kitchen Employees in Taiwan
Jong-Yu Adol Chyuan and Chih-Yong Chen

MORE VARIATION IN THE JOB: WILL IT IMPROVE MUSCULOSKELETAL HEALTH? - RESEARCH
Organizer: P. Paul F.M. Kuijer

Biomechanical and Physiological Considerations Regarding Variability of Physical Workload
Jaap H. Van Dieen and P. Paul F.M. Kuijer

Quantification of 'Variation' in Mechanical Exposure - Concepts and Metrics Related to Job Rotation
Svend Erik Mathiassen

Trapezius Motor Unit Firing in an Ergonomic Perspective: Effects of Force Amplitude and Force Variation
R.H. Westgaard and C. Westad

Psychophysical and Mechanical Loading during Computer Work: Do We All Need Frequent Rest Breaks?
Linda McLean

MORE VARIATION IN THE JOB: WILL IT IMPROVE MUSCULOSKELETAL HEALTH? - PRACTICES
Organizer: P. Paul F.M. Kuijer

Positive Effects of Variation in Physical Load on Worker's Health: Is There Empirical Evidence for the Ergonomist's Conviction?
Alex Burdorf, Svend Erik Mathiassen, and Freek Lotters

The Impact of Peak and Cumulative Spinal Loading on the Risk of Reporting Low Back Pain with Job Rotation
Mardon B. Frazer

Finding and Implementing the Optimal Rhythm in Short Cycle Time Assembly
Michiel de Looze, Gu van Rijn, Maarten van der Grinten, Noortje Schoenmaker, and Tim Bosch

Effect of Job Rotation on Need for Recovery and (Sick Leave Due to) Musculoskeletal Complaints: A Prospective Study among Refuse Collectors
P. Paul F.M. Kuijer, Allard J. van der Beek, Jaap H. van Dieen, Bart Visser, and Monique H.W. Frings-Dresen

MANAGEMENT OF WORK RELATED MSDS
Organizer: Hanne Christensen

Occupational Exposure Limits or Ergonomics Programs - Developmental Trends in EU and the US
Nils Fallentin

Company-Based Tools for Integrating Ergonomics in the Development of Industrial Production Systems - A Swedish Experience
Svend Erik Mathiassen, C. Jarebrant, B. Öjmart, and J. Winkel

Further Development of the Quick Exposure Check (QEC)
Geoff David, V. Woods, P. Buckle, and D. Stubbs
A Database of Work Requirements for Control of Work Disability Due to Musculoskeletal Disorders
Thomas J. Armstrong, Kristin A. Streilein, and Sheryl S. Ulin

WORLD MSD SYMPOSIUM SESSION I
Organizer: Kwan S. Lee

What is MSD?
Thomas J. Armstrong

MSD Prevention Activities in Japan
Naomi Hisanaga, Hideki Fukuda, Mamoru Hirata, Shin-ichi Sawada, and Susumu Saito

Research Program for the Prevention of Work-Related Musculoskeletal Disorders at the National Institute for Occupational Safety and Health, USA
Thomas R. Waters

MSD Prevention by Reducing Visual Discomfort and Visual Problem for Visual Display Units (VDU) Workers
Arne Aarás and Gunnar Horgen

Role of the Occupational Physician in the Management of Musculoskeletal Disorders in Italy
Francesco S. Violante, Stefano Mattioli, and Francesca Gnudi

WORLD MSD SYMPOSIUM SESSION II
Organizer: Kwan S. Lee

Occupational Ergonomics Interventions as a Prerequisite for MSD Prevention
Masaharu Kumashiro

MSD Problems in Shipbuilding Companies in Korea
Kwan S. Lee, Sung H. Shin, Il Han, Chang J. Lim, and Hong S. Seo

Industry View of Musculoskeletal Disorder Risk Factors and Prevention Steps: Comparison of Two Washington Industrywide Surveys
Barbara Silverstein, Michael Foley, and Nayak Pollisar

MSD Prevention Activities in Toyota
Il Sung Kim

Musculoskeletal Disorders (MSD) Prevention in Electronics Industry
Seong Rok Chang

Introduction of Occupational Safety and Health Activities for a Prevention of Musculoskeletal Disorders (MSD) in Mazda
Atsushi Funahashi

WORLD MSD SYMPOSIUM SESSION III
Organizer: Kwan S. Lee

Preventing Musculoskeletal Disorders by Trade Union Action Programs in Japan
Kazutaka Kogi and Sugio Furuya

Regulatory Actions in the Prevention of Work Related Musculoskeletal Disorders - The Danish Experience
Nils Fallentin

Ergonomics in the Furniture Manufacturing Industry
Gary Mirka, Gwanseob Shin, Karen Noack, and Sunil Sudhakaran
Errata

Musculoskeletal Disorders Prevention in the United Kingdom
Peter Buckle, David Stubbs, and Jason Devereux

Economic Analysis of Work-Related Musculoskeletal Disorders in Korea
Yu-Chang Kim, Gwan-Seok Lee, Seong-Rok Chang, Eun-Jin Choi, and Chang-Woo Hong

HEALTH

HEALTH I

IDD: A Case-Based Model of Learning in Design Using Artificial Neural Network-Based Approach
Hsin-Hsi Lai

Environmental Climate in the Workplace - An Ergonomic Approach
Monica Sommer Bittencourt and Gilsee' Ivan Regis Filho

An Ergonomic Study on Gait-Training Apparatus for Cerebral Palsy Children
Heng-Chang Lim, Hsin-Hsi Lai, and Chyan-Lung Wu

Cigarette Warning Labels: A Survey
Fereydoun Aghazadeh, Ashish Nimbarte, Muniraju Bairi, and Tonja Latham

The Effects of Medication on Performance and Safety at Work
Cheryl O. Haslam, Sarah Atkinson, Sue Brown, and Roger Haslam

Measurements of the Forces Needed to Transfer Patients from Beds to Hospital Trolleys
David McFarlane

HEALTH II

Job Satisfaction and Workers' Health - A Case Study
Ana Isabel Bruzzi Bezerra Paraguay and Maria Carmen Martinez

The Importance of Relaxation and Instruction When Learning a Balanced Posture: A Look at Elderly, Middle-Age, and Elementary School Children
Iiji Ogawa

An Explorative Study of the Relationship between Age, Offshore Working Conditions and Occupational Health
Ashild Bakke, Espen Olsen, and Aslaug Mikkelsen

Ergonomic Work Analysis of Peddlers at Beaches in Rio de Janeiro
José O Gomes, Aldo Aral, Alexandre K. R. Tanaka, Clovis Correa Bucich, Fernando Mauricio Aquino Mendes, Guilherme Aranha R. P. Ribeiro, Jaime T. Naveiro, and Leandro dos Santos de Jesus

Psychosocial Factors Associated with Sick Building Syndrome in a Biased and Unbiased Population of Office Employees Occupying Two Buildings in South Africa
Karl A. Heslop

The Role of Personal, Environmental, Occupational and Psychosocial Factors in Sick Building Syndrome amongst Employees in Two Buildings in South Africa
Karl A. Heslop
### HEALTH III

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Relationship between Job Characteristics, Participation in Organizational Restructuring and Subjective Health: Does Age Really Matter?</td>
<td>223</td>
</tr>
<tr>
<td>Aslaug Mikkelsen and Torvald Øgaard</td>
<td></td>
</tr>
<tr>
<td>Preliminary Results: A Questionnaire Study of the Effects of Changes Brought on by New Technology on the Health of Working Age Population</td>
<td>228</td>
</tr>
<tr>
<td>Noomi Laakkonen and L. Korpinen</td>
<td></td>
</tr>
<tr>
<td>Sickness Absence Rates amongst Office Employees due to Sick Building Syndrome in Two Buildings in South Africa</td>
<td>232</td>
</tr>
<tr>
<td>Karl A. Heslop</td>
<td></td>
</tr>
<tr>
<td>Prevalence of Sick Building Syndrome Symptoms amongst Office Employees in Two Buildings in South Africa</td>
<td>236</td>
</tr>
<tr>
<td>Karl A. Heslop</td>
<td></td>
</tr>
<tr>
<td>The Influence of Sick Building Syndrome on Self-Reported Productivity and Work Disruption amongst Office Employees in Two Buildings in South Africa</td>
<td>241</td>
</tr>
<tr>
<td>Karl A. Heslop</td>
<td></td>
</tr>
<tr>
<td>Back, Neck and Shoulder Pain in Home Health Care Workers</td>
<td>246</td>
</tr>
<tr>
<td>Kurt Hegmann, Arun Garg, Stephen Alder, Matthew S. Thiese, Aaron Wendelboe, and Clint Thompson</td>
<td></td>
</tr>
</tbody>
</table>

### HEALTH IV

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical Injury in Driving Occupations with Low Velocity Rear-End Collisions</td>
<td>250</td>
</tr>
<tr>
<td>Shrawan Kumar, Yogesh Narayan, and Tyler Amell</td>
<td></td>
</tr>
<tr>
<td>Designing Out Back Pain in High Mileage Business Drivers</td>
<td>255</td>
</tr>
<tr>
<td>Diane E Gyi, J.M. Porter, and Helen J. Williams</td>
<td></td>
</tr>
<tr>
<td>The Effects of Backpack Weight on Subjects with and without Adolescent Idiopathic Scoliosis</td>
<td>259</td>
</tr>
<tr>
<td>Airport Check-in Work: Consequences for Worker Health and Management Practices</td>
<td>263</td>
</tr>
<tr>
<td>Ellen Rosskam</td>
<td></td>
</tr>
<tr>
<td>A Study on the Assessment of Vibration Produced by the Powered Hand Tools Used and Hand-Arm Vibration Syndrome Prevalent in the Shipbuilding Industry</td>
<td>267</td>
</tr>
<tr>
<td>S.H. Yim and Heesok Park</td>
<td></td>
</tr>
</tbody>
</table>

### EXPOSURE ASSESSMENT; LINKING OCCUPATIONAL HYGIENE WITH ERGONOMICS

**Organizer: David Zalk**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring the Costs and Effects of Ergonomic Interventions: Two Examples from the Construction Industry</td>
<td>271</td>
</tr>
<tr>
<td>Alex Burdorf, Willem-Jan Meerdmg, and Judith Windhorst</td>
<td></td>
</tr>
<tr>
<td>Exposure Assessment and Musculoskeletal Disorders: Will Ergonomists Ever Develop a Dosimeter?</td>
<td>274</td>
</tr>
<tr>
<td>Patrick G. Dempsey</td>
<td></td>
</tr>
<tr>
<td>Ergonomic Implications of Variation in Exposure Measurement</td>
<td>278</td>
</tr>
<tr>
<td>Marco Hoozemans</td>
<td></td>
</tr>
<tr>
<td>Control Banding Principles to Reduce Musculoskeletal Disorders: The Ergonomics Toolkit</td>
<td>281</td>
</tr>
<tr>
<td>David M. Zalk</td>
<td></td>
</tr>
</tbody>
</table>
INDUSTRIAL HEALTH

Assessment of Occupational Biomechanics of the Neuron-Paediatric Physiotherapists: A Case Study
Ciro Franco de Medeiros Neto and Francisco Soares Masculo

An Ergonomic Analysis of Medical Students in Cardiology Diagnosis
Carlos Alberto Ferreira Vieira de Castro, José Orlando Gomes, and Mário Cesar Rodíguez Vidal

A Taxonomy for Human Error in Medicine
Shi-Woei Lin and Bruce Thomadsen

Hospital Ergonomics: An Ergonomic Study in a Sterilized Material Center
Fabio Barrozo Pinto Fernandes and José Orlando Gomes

An Ergonomic Evaluation of Endoscopic Examinations: Formulation of Guidelines to Improve the Interaction between Physicians and Equipments
Teresa Cotrim, Cláudia Francisco, João Lopes Freitas, Maria Cristina Fonseca, Francisco Rebelo, and Luísa Barreiros

Application of Run Length Matrix to MR Images Diagnosis of Patients with Alzheimer-Type Dementia
Tomoharu Kaenya, Naoki Kodama, Tomoyuki Kaneko, and Ichiro Fukumoto

HOSPITAL ERGONOMICS

HOSPITAL ERGONOMICS I

Cumulative Trauma Disorders Affecting Surgeon-Dentists: Biomechanical Aspects - An Ergonomic Approach
Gilse'e Ivan Regis Filho, Glaycon Michelis, and Ingeborg Sell

Carpal Tunnel Syndrome in Surgeon-Dentists: A Case Report; An Ergonomic Approach
Caroline Alberci Martins, Marianella Aguilar Ventura Fadel, and Gilse'e Ivan Regis Filho

Ganglion of the Wrist in Surgeon Dentists: A Case Report; An Ergonomic Approach
Lisiane Candido, Mônica Sommer Bittencourt, and Gilse'e Ivan Regis Filho

The Use of Color and Music in the Dental Workstation (The Color and Music in Odontological Environment)
Renata Goulart Castro and Gilse'e Ivan Régis Filho

Labor Psychopathology: A Reflection Regarding Occupational Stresses in Dental Surgeons
Dayane Machado Ribeiro, Michelle Soares, and Gilse'e Ivan Régis Filho

Professional Diseases in Dental Surgeons: An Ergonomic Approach
Andrada Manente Lazeris and Gilse'e Ivan Régis Filho

HOSPITAL ERGONOMICS II
Organizer: Sue Hignett

Evidence-Based Patient Handling: A Systematic Review
Sue Hignett

Designing for Patient Safety: How the Effective Use of Design could Help to Reduce Medical Accidents
Peter Buckle, P.J. Clarkson, R. Coleman, M. Kennedy-Martin, R. Lane, D. Stubbs, and James Ward
### SAFETY

#### SAFETY I

- **Safety and Communication Culture, Incident Reporting, and Incident Awareness and Knowledge in an Airline**
  Johan Jonsson and Curt R. Johansson
  357

- **Advantages and Disadvantages by Using Safety Culture**
  Mette B. Dyhrberg
  361

- **Safety Culture and Organizational Climate in Air Traffic Control**
  Asa Ek, Roland Akselsson, Marcus Arvidsson, and Curt R. Johansson
  364

- **Team Climate and Safety Culture in Air Traffic Control**
  Marcus Arvidsson, Curt R. Johansson, Asa Ek, and Roland Akselsson
  368

- **Motivation for Occupational Safety I**
  Snejana Stojanovic, Zdravkovic Slobodanka, and Zdravkovic Miroslub
  372

  Seiji Machida
  375

#### SAFETY II

- **A Theoretical Approach of Accident Cost Analysis for Product Safety Management**
  Sa Kil Kim and Seong Nam Byun
  379

- **Accidents Involving Motorized Two-Wheel Drivers: An In-Depth Analysis**
  Pierre Van Elslande and Katel Fouquet
  383

- **Ergonomic Assessment and Improvement for Accident Dangerous Intersections without Traffic Signal Light**
  Sadao Horino, Masaru Ueyama, Midori Mori, and Sou Kitajima
  387

- **Design Activity as the Result of a Succession of Compromises: from Design to Use, What Impact on Prevention?**
  Cecilia De la Garza and Elie Fadier
  391

- **Development of a Comprehensive Model for Implementing Organisation’s Health, Safety and Environmental Management System**
  Antti Leino
  395

#### SAFETY III

- **Object-orientated Modelling and Prognosis of Occupational Health and Safety-Relevant Data**
  Gert Zülch, Tim Grieger, and Volker Keller
  399
The Content of Occupational Accident Information in the Finnish Accident Investigation System and Its Usability in Accident Prevention
Tuula H. Räsänen and Susanna Mattila

Significant Industry-Source of Injury-Accident Type for Occupational Fatalities in Taiwan
Chia-Fen Chi, Chang Tin-Chang, and Kuei-Hui Hung

Aims and Prospects in Developing the Reporting System of Fatal Work Accidents in the Finnish Metal Industry
Salla Lind

Navigator’s User Model Based on Radar and ARPA Switch Usage Fieldworks
Ryu Shimizutani, Takashi Kubota, and Nobuyoshi Kouguchi

Navigator’s Information and Decision-making Process- Cognitive Experiment using Navigational Simulator
Takashi Kubota, Ryu Shimizutani, Shusaku Imo, and Nobuyoshi Kouguchi

SAFETY IV

Is 18 seconds Reasonable? A Meta-Analysis of Human Alarm Handling Response Times in Critical Scenarios
Neville A. Stanton

Risk Perception: The Effects of Technical Knowledge - or Lack of It
Danielle L. Paige and Kenneth R. Laughery

Risk Communication in Press: EMF Case Study
Pekka Laitinen, Noomi Laakkonen, and Leena Korpinen

Risk Management of Operator’s Workplace in Control Rooms in the Coal Mines
Suzana Savid’ and Grozdanovíc Miroljub

Workers Compensation Board Claims Incidence in the Sawmill Industry of Alberta, Canada
Troy Jones and Shrawan Kumar

Cognitive Systems Engineering Analysis of JCO Criticality Accident in Tokaimura and Lessons Learned for Safety Design and Management
Fumiya Tanabe and Yukichi Yamaguchi

SAFETY V

A New Study of Human Factors in the Nuclear Safety Field
M. Tosello, Jean-Francois Vautier, and B. Sevestre

Ergonomic Improvement for Road and Traffic Management System at Five-Roads-Crossing in View of Driver’s Recognition
Midori Mori and Sadao Horino

Quantitative and Qualitative Analysis of Truck Drivers’ Attitudes toward Feedback by Technology
Matthias Roetting, Yueng-Hsiang (Emily) Huang, Jamie R. McDevitt, and David Melton

An Assessment of the Physiological Effects on Baggage Handlers of Unloading and Loading an Aircraft while Using a Mobile Baggage Conveyor System
S. Conway, C. Duignan, and E. Fallon

The Mechanism of Intensified Work, Deaths and Injuries in the Workplace in One Ship-Building Factory in Korea
Mia Son, John Sung, Hee - Suk Cho, Hong Gi Kim, Jung - Yong Kim, Dong - Mook Kang, Sang - Baek Ko, Kun - Hyung Kim, Won - Jin Ko, and Sung - Yeon Na
Occupational Health of Young Women Workers in Export Processing Zones
Jose Lauro Llamas

SAFETY VI

Development of the Quality of Workplace Health Promotion in Security Organisations
Veikko A. Louhevaara, K. Saarinen, and S. Lusa

Relations between Navigators' Performance Shaping Factors at Incidents
Yoshio Murayama and Yusuke Yamazaki

Cross-cultural Application of Data for Prevention of Foreign Body Injury and Fatality in Children

A Study on the Effect of Heat Stress on Work and Cognitive Performance during Simulated Construction Work
Takuro Shoji, Hikaru Koshimizu, Kuninori Kimotsuki, and Yoshiyuki Egawa

Head Injury, the Primary Factor to Fatality in Indian Industries
Pranab Kumar Nag and Anjali Nag

SAFETY VII

Identification and Analysis of Human Errors of Commission in Accident Scenarios of Nuclear Power Plants
Jae W. Kim, Wondea Jung, and Jinkyun Park

Estimation of Safe Weight on the Change of Load Locations Using the Psychophysical Method
Hyun Jin Park, Chang Han Seong, and Seong Rok Chang

Efficacy of Web-based Training for Office Ergonomics
Nathan P. Rucker

Evaluating Occupational Safety of Rehabilitation Home Nurses
Celestine A. Ntuen and Tina C. Ntuen

Development of the Objective Evaluation System on Drug Names' Similarity
Fumito Tsuchiya and Noboru Kawamura

SAFETY VIII

Ergonomic Criterion of Standard Railing Height for Preventing of Fall Accidents
Dong-Ha Kim

In-Depth Accident Scenario Analysis for Baby Walker Cases
Seong Nam Byun, Dong Hoon Lee, and Seong Nam Choi

A Study of Ride Comfort Evaluation on the Thrill Ride
Nobuo Machida

Farmers on the Roads - Accidents and Suggestions for Their Improvements
Peter Lundqvist and Stefan Pinzke

Ergonomic Management System and Case Study in Machinery Manufacturing Company
Yeong-Gon Kim, Dong Cheol Bae, and Seong Rok Chang

The Influence of the Visual Road Environment on Self-Speed Estimation
Catherine Berthelon
HEALTH <POSTER PRESENTATION>

**HEALTH I**

A Novel Approach to Improve Quality of Life in Artificial Heart Patients

Relation of Resolution and Distance from Antenna in Medical and Nursing Application of Radio Imaging Method (RIM)
Ichiro Hieda and Akihiko Takahashi

A Study of Hippocampal Atrophy and Cognitive Dysfunction in Patients with Early Alzheimer-Type Dementia
Naoki Kodama, Tetsuo Shimada, Tomoharu Kaeriyama, Tomoyuki Kaneko, and Ichiro Fukumoto

Cumulative Trauma Disorders and Identification of Risk Factor Associated with Human Work in Surgeon-Dentists Employing "Rapid Upper Limb Assessment" (RULA)- An Ergonomic Approach
Gilse'e Regis Filho, Glaycon Michel, and Ingeborg Sell

Cumulative Trauma Disorders Affecting Surgeon-Dentists: Epidemiologic Aspects - An Ergonomic Approach
Gilse'e Regis Filho, Glaycon Michel, and Ingeborg Sell

Automated Nodule Enhancement System for Plain Chest Radiographs with a Nodule Elimination Filter
Tetsuo Shimada, Naoki Kodama, Hideya Satoh, Kazuhiko Teru, Kazuhiko Iwasaka, Hiroyuki Tanaka, Yoshitaka Nishimura, and Ichiro Fukumoto

The Investigative Study on Communication in Nursing Profession
Mitsunori Tachibana, Yuki Mizuno, Motoki Mizuno, Michiko Suzuki, Nobuyuki Nakajima, and Tetsuo Misawa

**HEALTH II**

A Study of Patient Requirement to Medical Care - A Comparison of Patient’s View with the Medical Staff’s Concerning Diabetic Education
Ayumi Ooomote and Toshiko Abe

The PROMO Study: Prospective Research on Musculoskeletal Disorders in Office Workers
Stefan JImler, Birgitta M. Blatter, Allard J. van der Beek, Willem van Mechelen, and Paulien M. Bongers

Work Related Musculoskeletal Risk Level with Nursing Tasks in Neurosurgical ICU by OWAS
Jong - Eun Lee and Soon - Lae Kim

The Assessment of Intervention Methods for Carpal Tunnel Syndrome (CTS) Using a Self-Administered Questionnaire
Dong joon Kang, Andris Freivalds, Milind J. Kothari, and Sanjiv H. Naidu

A Study of Human Errors from Sentinel Events in Radiotherapy
Shi-Woei Lin and Bruce Thomadsen

Frequent Musculoskeletal Disorders and Health Related Quality of Life among Industrial Workers - A Prospective Study
Tone Morken, T. Riise, and B. E. Moen

Physiotherapy - The Risks Incurred by the Practitioner
Cristiane de Souza dos Santos and Clovis Corrêa Bucich
HEALTH III

Online Casebook on Industrial Accident Analysis: Improvement of Learning and Teaching
Yanny H. K. Yu, Vicki W. Y. Shum, and Alan H. S. Chan, and Michael K. H. Leung

The Physical Exposure of Sign Language Interpreters: Baseline Measures
Alain Delisle, Christian Lariviere, Brenda Santos, Daniel Imbeau, and Marie-José Durand

Carrying of Backpack by School Children - A Study
Mandira Dhar and Krishna Nirmalya Sen

A Study of Lying Posture and Distribution of Body Pressure on the Bed by Elderly and Young Japanese Parson
Kubo Hiroko, Tomnori Tada, and Takuko Yanase

Effects of Oxygen and Aroma Supply on Fatigue
Ja-Hae Jeon, Byung-Chan Min, Eun-Jung Sung, Hyo-Jeong Jeon, Seung-Chul Kim, and Chul-Jung Kim

Eye Movements while Viewing Images with and Without Unpleasant Factors
Katsunori Tanii

Evaluation of the Technical Aids
Masashi Uchikune

SAFETY <POSTER>

SAFETY II

Participative Ergonomics as a Management Tool - Effects on Accidents, Sick Leave and Other Performance Indicators
Svein Grahnstedt and Knut Skyberg

The Relationship between Risk Perception, Driving Experience, Attitude Toward Safety, and Driving Behavior on a Simulator
Yusuke Yokota, Shigeru Hage, Tetsuo Ogawa, and Mitsuteru Kokubun

A Study on Communications during Steering Work on a High-Speed Vessel
Shuji Hisamune, Nobuo Kimura, Kiyoshi Amagai, Koya Kishide, and Kazuhiko kato

Ergonomic Analysis of Work and Physical Fitness of the Informal Sector’s Workers in Florianopolis: A Multicase Study of Surfboard’s Manufacturers
José de Fátima Juvêncio, Maria de Fátima da Silva Duarte, and Marcelo Márcio Soares

The Requisite Characteristics for Diagnosis Procedures Based on the Empirical Findings of the Operators’ Behavior under Emergency Situations
Jinkyun Park, Wondea Jung, and Jaejoo Ha

Automation-Related Accidents of Medical Electronic Devices Correlated with the Problem of ‘Glass-cockpit’
Kazuhiko Shinozaki

Psychological Analysis of Mental Workload at an Elevated Work Place: Comparison between Elderly and Young Workers
Shinnosuke Usui, Yoshiyuki Egawa, Takuro Shoji, and Takahiro Nakamura
SAFETY III

How to Manage the Human Factors in a Systemic Way in Order to Improve the Safety of Work Situations
Sylvie Garandel, J.F. Vautier, I. Barnabe, and B. Sevestre 643

Ergonomic Design of Information and Control Systems in the Coal Mines
Dobrivoje Marjanovic, Miroljub Grozdanovic and Nenad Zivkovic 647

Development of a Knowledge Database to Evaluate the Work Risks in the Building Industry Sector?
Abel Pinto and F. Rabelo 651

ELF Magnetic Fields in Work Environment in the Paper Industry
T. Keikko, T. Sauramäki, P. Laitinen, N. Laakkonen, and L. Korpinen 655

Prevention of Injuries at Work Places
Ashok Tripathi 659

Inadequate Lighting as an Indirect Factor in Occupational Accidents
Agnieszka Wolska 663

Safety Reliability Analysis for Older Drivers
Zheng Dianye, Jin Jian, Yang Jingshuai, and Graeme McLay 667

SAFETY I

A Study on Technology and Work Skills for Fishermen in the Purse Seine Fishing Industry
Shuji Hisamune, Nobuo Kimura, Kiyoshi Amagai, and Koya Kishida 671

Occupational Accidents in the Construction Sector
Maria G. Ioannides, M.S. Pisimisi, and I. K. Papaioannou 675

Technical Management of Electric and Magnetic Fields in Working Environments
Tommi Keikko, T. Sauramäki, P. Laitinen, N. Laakkonen, and L. Korpinen 679

The Medical Accident Analysis by the Ergonomics Beginners Using “The Investigation Analysis Manual for Human Factors’ Accidents”
Fumiko Matsuda, Yuki Mizuno, Thor Ikegami, and Koya Kishida 683

When and Where do People Face with Hazardous Situation in Natural Disasters?
Hong Son Shin 687

Study on Evaluation of Usability of Insulin Self-Injection Devices
Kousuke Yamada and Kazuo Aoki 689

Experimental Study on Similarity of Drug Names and Confusion Errors
Yasuyo Yamada, Shigeru Haga, Hong Son Shin, and Fumito Tsuchiya 693