# Table of Contents

## Section I: Participation and Collaboration

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Participatory ergonomics in a mobile factory: Ergonomic device to decrease neck pain</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>S. A. Miguez, Brazil/The Netherlands, P. Vink, The Netherlands, and M. S. Hallbeck, USA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Reflection-for-action: A collaborative approach to the design of a future factory</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>A. Wikberg Nilsson and S. Johansson, Sweden</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Collaboration between design and production by exploiting VR/AR and PLM - Case Metso Minerals</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>S.-P. Leino, M. Vehviläinen, S. Kiviranta, A. Mäkiranta, P. Nuutinen, I. Hokkanen, P. Multanen, P. Rantanen, J Heikkilä and T. Martikainen, Finland</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Trust development in distributed multi-cultural teams: Agent-based modeling and simulation</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Y. Liu, USA</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Adaptive coordination and shared leadership in high-risk teams: A framework for future research</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>G. Grote and M. Kolbe, Switzerland</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Collaborative design of workplaces: The role of boundary objects</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>O. Broberg, R. Seim and V. Andersen, Denmark</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Measuring cross-cultural stimulus-responses on the internet</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>E. MacKerrow and J. Watkins, USA</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Design and testing of a support of ad hoc communication for tacit workers</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>The multidisciplinarity in the development of work systems conception works projects: A review of theoretical-practical about the subject</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>L. Gontijo, G. Balbinotti, A. Motter and M. Guaragni, Brazil</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Using operational sequence diagrams to assess interagency coordination in traffic incident management</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>R. Feyen, USA</td>
<td></td>
</tr>
</tbody>
</table>
Section II: Human Performance

11 Globalizing project managers' creative tension, an overview
A. Bikfalvi, Spain, P. Porkka, Finland, H. Aramo-Ihmamonen, Finland,
N. Mancebo, Spain, J. Kantola, Korea, and H. Vanharanta, Finland

12 Job-redesign in knowledge work
O. H. Sorensen, Denmark, and D. Holman, UK

13 Human performance technology and working reliability
O. Burov, V. Kamyshin and O. Burova, Ukraine

14 How novice instructor can learn a stable evaluation in report assignment
with no predetermined rules
T. Akasaka and Y. Okada, Japan

15 Act and anticipate hazard perception training for young-inexperienced
drivers
A. Meir, A. Borowsky, T. Oron-Gilad, Y. Parmet and D. Shinar, Israel

Section III: Working and Working Environment

16 Work seats: A short historical outline
J. Charytonowicz, Poland

17 The effects of expectations and an office environment on comfort
experience
C. Bazley, USA, and P. Vink, The Netherlands

18 Office ergonomics interventions: Examining the effects on
musculoskeletal risk, environmental control and comfort
M. Robertson, USA, B. Amick, USA/Canada, Y. H. Huang, USA,
and G. Kernan, USA

19 Order-picking in deep cold - A gender-related analysis of subjectively
assessed effects
M. Penzkofer, K. Kluth and H. Strasser, Germany

20 Age-related physiological strain of male order-pickers in deep cold
K. Kluth, M. Penzkofer and H. Strasser, Germany

21 Ergonomic assessment: Risk exposure among construction workers
P. Joshi, P. Sharma and A. Sharma, India

22 Glovebox gloves: Effects on forearm muscle activity for gripping with
maximal and sub-maximal efforts
P.-C. Sung, P.-J. Cheng and C.-L. Lee, Taiwan
23 Factors affecting success and failure in a return-to-work program established for a department of defense aircraft maintenance facility
E. Irwin, K. Streilein and R. Slife, USA

24 Innovative ways of working: A comparison of a traditional and a flexible office environment on office space use, performance, privacy and satisfaction
M. Blok, L. Groenesteijn, M. Formanoy, E. de Korte and P. Vink, The Netherlands

25 The effects of correlated color temperature and illuminance on color discrimination
W. Cheng, Y. Lin and Y. Sun, P. R. China

26 Investigating manual work using human factors approaches and behavioral analysis
G. Lawson, UK, G. Tosolin, Italy, C. Leva, Ireland, S. Sharples, UK, A. Langley, UK, S. Shalikh, UK, and P. Liston, Ireland

27 Perceived time, temporal order and control in boundaryless work
H. Lund, H. Hvid and A. Kamp, Denmark

28 Shaping usability engineering methods to fit the IT applications development process
D. Dunkle, USA

29 Safety climate in truck transportation: Field studies of their levels correlated with safety outcomes
Y. Li and K. Itoh, Japan

30 Usability group management methods: How to create a cohesive, innovative and high-performing team
L. Tudor, R. Ramarajan and H. Wang, USA

31 Evolving problem-solving performance by mixed-culture dyadic teams
R. Warren, USA

32 Measuring performance of office work: An overview of test-procedures
H. Gebhardt, L. Levchuk, C. Muehlemeyer and K. Bux, Germany

Section IV: Health and Well-Being

33 Prevention of work-related stress in practice – A participatory approach
C. Ipsen, P. L. Jensen and V. Andersen, Denmark
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>The intermittent duty of information and communication technology</td>
<td>S. Tuomivaara and K. Eskola</td>
<td>Finland</td>
</tr>
<tr>
<td></td>
<td>among immediate superiors of social and health care services - A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>research and development project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Ergonomic conditions for social integration of the disabled</td>
<td>J. Olszewski</td>
<td>Poland</td>
</tr>
<tr>
<td>36</td>
<td>The paradox of lean in healthcare: Stable processes in a reactive</td>
<td>A. P. Nielsen and K. Edwards</td>
<td>Denmark</td>
</tr>
<tr>
<td></td>
<td>environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Professional assessment and collective standards - lean in a cancer</td>
<td>P. Hasle</td>
<td>Denmark</td>
</tr>
<tr>
<td></td>
<td>department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Status of ward nurses in health care industry of Uttarakhand State of</td>
<td>I. Karki and P. Sharma</td>
<td>India</td>
</tr>
<tr>
<td></td>
<td>approach through hospital ergonomics India: An</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Survey of health problems for long-haul flight travelers</td>
<td>B.-S. Liu and C.-C. Wu</td>
<td>Taiwan</td>
</tr>
<tr>
<td>40</td>
<td>An approach to study the body back discomfort of economy class</td>
<td>C. F. Tan, W. Chen and M. Rauterberg</td>
<td>The Netherlands</td>
</tr>
<tr>
<td></td>
<td>aircraft passenger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Ergonomics in the context of prevention, educational proposal and</td>
<td>E. Cadavid and L. M. Saenz</td>
<td>Colombia</td>
</tr>
<tr>
<td></td>
<td>current situation in Colombia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>The evaluation of an assistive chair design for the elderly</td>
<td>C. Huang</td>
<td>Taiwan</td>
</tr>
<tr>
<td>43</td>
<td>Psychological aspects of residential bathroom design</td>
<td>A. Jaglarz</td>
<td>Poland</td>
</tr>
<tr>
<td>44</td>
<td>The effects of repetitive lifting on lumbar spinal motion in a young</td>
<td>M. Boocock, G. Mawston and R. Smith</td>
<td>New Zealand</td>
</tr>
<tr>
<td></td>
<td>and middle-aged population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Discomfort and other measures for the assessment of postural load</td>
<td>D. Kee and I. Lee</td>
<td>Korea</td>
</tr>
</tbody>
</table>
46 Evaluation of neck, shoulders, arms and hands muscles fatigue of sewers using myotonometric method and effectiveness of early multidisciplinary rehabilitation
Z. Roja, V. Kalkis, H. Kalkis and I. Roja, Latvia

47 Ergonomic assessment of farm activities of women farmers of Mountain of India: Approach towards drudgery reduction
A. Kaliya, P. Sharma, S. Singh and I. Karki, India

48 Influences of office tasks on body dynamics using dynamic office chairs
L. Groenesteijn, The Netherlands, P. Vink, The Netherlands, R. Ellegast, Germany, K. Keller, Germany, and H. Berger, Germany

49 Whole-body vibration exposure and musculoskeletal complaints in urban mail carriers
H.-C. Chen, Y.-P. Liu and C.-T. Chiang, Taiwan

50 The relationship between the subjective perception of physical capability and muscular strength during repetitive lifting tasks
R.-L. Jang, Taiwan

51 Good ergonomic setup for healthy posture at work
S. Singh and P. Sharma, India

52 Ergonomic assessment of dairy activities performed by rural women of Punjab (India)
K. Oberoi, S. Sharma and P. Kataria, India

53 Musician related cumulative muscular disorders as assessed using a Taiwanese questionnaire survey
C.-L. Chen, Taiwan

54 Designing lifting task in shoe industry using genetic algorithm
S. Srivastava, K. Srivastava, N. Swati and N. Singh, India

55 Prevalence of low back pain in long distance truck drivers of mountainous terrain
M. Goon, S. Ghoshal, B. Chandrasekaran and B. C. Sharma, India

56 Ergonomics aspects of CNC-units - A survey among trainees
A. Klussmann I. Levchuk, A. Schafer and K.-H. Lang, Germany

57 Identification of hazards at a constant work place by means of the map of system work
T. Musiol and J. Grzesiek, Poland
58 Occupational safety management and application of economic guidelines in the shaping of working conditions in supermarkets
K. Lis and J. Olszewski, Poland

59 A challenge for the future: Efficient, attractive and sustainable factories
S. Johansson and A. Wikberg Nilsson, Sweden

Section V: Environment and Living Environment

60 Eco-ergonomics in architecture
A. Skowrons, Poland

61 Building with reclaimed materials in view of ergonomic design
M. Skowrons and J. Charytonowicz, Poland

62 Beauty and ergonomics of living environment
W. Bonenberg, Poland

63 Temporary architecture - Building, exploitation, demolition
P. Nowakowski, Poland

64 Ergonomic harmonization of universal mobility design in urban environment
S. Horino and K. Kogi, Japan

65 Ergonomic assessment of old age homes and related health hazards on elderly people
S. N. Kashyap and P. Sharma, India

66 Visibility profiles of stadium stands derived from profiles of comfortable stairs
Z. Pelczarski, Poland

67 Ergonomic assessment of interiors in residential dwellings and impact on residents
S. Agarwal, India, P. Sharma, India, and L. Gupta, USA

68 Ergonomic design of school furniture: Challenges for the Portuguese schools
I. Castellucci, M. A. Gonçalves and P. M. Arezes, Brazil

69 Design development of toilet chair on ergonomic principles through CAD
N. Kaur, P. Sharma and K. Oberoi, India
Section VI: Virtual Environment

70 Virtual and augmented reality technologies for supporting heterogeneous multidisciplinary end-users across product lifecycle
S. Kiviranta, Finland, M. Poyade, Spain, and K. Helin, Finland

71 ManuVAR Training: Supporting the Implementation and design of VR/AR quality-Improvement tools for manual handling
P. Liston, Ireland, S. Cromie, Ireland, M.-C. Leva, Ireland, K. Helin, Finland, and M. D'Cruz, UK

72 Integration of human factors methods to the ManuVAR product lifecycle management model
S. Aromaa, Finland, J. Viitaniemi, Finland, C. Leva, Ireland, and B. Krassi, Finland

73 Supporting workers through the combination of mixed reality and mobile devices in wide areas
N. Frangakis, Greece, I. Karaseitanidis, Greece, R. Blach, Germany, and T. Gleue, Germany

74 A virtual interactive training application to support manual work
M. Strauchmann, Germany, T. Haase, Germany, J. Viitaniemi, Finland, S. Kiviranta, Finland, and P. Vink, The Netherlands

75 ManuVAR PLM model, methodology, architecture, and tools for manual work support throughout system lifecycle
B. Krassi, Finland, S. Kiviranta, Finland, P. Liston, Ireland, S.-P. Leino, Finland, M. Strauchmann, Germany, A. Reyes-Lecuona, Spain, J. Viitaniemi, Finland, J. Sääski, Finland, S. Aromaa, Finland, and K. Helin, Finland

76 From teaching machines to the exploitation of virtual and augmented reality: Behaviour analysis supporting manual workers in aerospace industry within the European project ManuVAR
G. Tosolin and A. Valdina, Italy

77 Augmented reality in factory environments - System usability and human factors studies
J. Sääski, Finland, G. Karaseitanidis, UK, and T. Salonen, Finland

78 ManuVAR: A framework for improving manual work through virtual and augmented reality
B. Krassi, Finland, M. D'Cruz, UK, and P. Vink, The Netherlands
79 Development of 3D ergonomics requirement models for cabin development
A. Sundin, J. Landen, A. Hedberg and J. Holler, Sweden

80 Usability evaluation of target expansion schemes in selecting targets with a mouse
D. Lee, S. Kwon and M. K. Chung, Korea

81 Consumer perception of mobile phone attributes
T. Zhang, P. L. P. Rau and J. Zhou, P. R. China

82 The human factor in lean software development
A. Borucki and L. Pacholski, Poland

Section VII: Macro-Ergonomic Aspects

83 Ecological aspects of macroergonomics
S. Janik and D. Grygiel, Poland

84 Ergonomics' contributions to a company's innovation strategy
J. Dul, The Netherlands

85 The social role of ergonomics and material environment design
K. Lis, Poland

86 The leader impact on proergonomic activities
E. Jasinska, W. Jasinski and S. Janik, Poland

87 Macroergonomic development of industrial production processes
L. Pacholski and B. Mateja, Poland

88 The guidelines for the sociotechnical subject: The practical results about the subject
G. Balbinotti, Brazil, L. Gontijo, Brazil, A. Trautvein, Brazil, A. Motter, Brazil, and M. Robertson, USA

89 Ergonomics in industrial design education process: A conceptual and methodological experience
L. M. Sáenz, Colombia

90 Ergonomic aspect of urban and social dynamics
A. Bonenberg, Poland