EuroSciCon

DAY 1

Keynote Forum

1st Edition of International Conference on

Ergonomics & Human Factors

July 26-27, 2018 | Rome, Italy

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Paola Tomasello, Arch Med 2018, Volume 10
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PSYCHOPATHOLOGY OF AVIATION FRONT-LINE STAFF AND SAFETY: GUIDELINES FOR THE PREVENTION OF ADVERSE EVENTS

Paola Tomasello

Giustino Fortunato University, Italy

On 24 March 2015, the Germanwings flight 9525, carrying 150 people on board, crashed in the foothills of the French Alps. Safety investigation ascertained, based on CVR listening, that the accident was due to the co-pilot's suicidal intention. Anti-depression medication was found in his home; furthermore, there was evidence that he had undergone psychiatric treatment in specialised centres. Two questions are relevant: how was it possible for the co-pilot to keep pilot license despite a certified psychopathological condition? Is it possible to predict the social danger level of a person suffering from psychopathology? Reading the current European Regulation (EASA part-MED), it seems that the certification of psychopathological disease is up to the individual initiative of the person suffering from it, or, potentially, to the reporting by the colleagues, with all the critical issues inherently associated. There are psychopathological syndromes that could result invisible to poor structured psychodiagnostic monitoring protocols. To predict a social danger level of a person means to reconstruct his history and, hence, find out what personal meanings s/he is prone to attribute to her/his own experience and how this affects her/his wellbeing, in order to understand why s/he has ended up in limiting her/his range of possibilities to the extent that damaging her/himself and other people is considered as the only way to manage her/his discomfort. These topics are the object of a corpus of guidelines, proposed by the author of this paper to safety-critical organizations, for the mitigation of the hazards related to the presence of psychopathological conditions in the aviation frontline staff. The proposed approach brings about a change of perspective, intended to hinder stigma and trivialization towards psychopathological disease, as well as to deliver a message in which the safety of aviation operations corresponds to the health of professionals in charge of generating it.

Recent Publications

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2. Tomasello P (2015), Psychopatology: An underestimated hazard for aviation safety? The Aviation & Space Journal, XIV-2, p.14 http://www.aviationspacejournal.com/wpcontent/uploads/2015/06/The-Aviation-Space-Journal-Year-XIV-no-2-April-June-20151.pdf
3. Tomasello P (2013), A Tentative taxonomy of Aviation Psychology The Aviation & Space Journal, XII-2, p. http://www.lslex.com/bin/The_Aviation__Space_Journal_APRILJUNE_2013_YEAR_XII_N_2.pdf
4. Contissa G., Lanzi P., Laukyte M., Marti P., Masutti A., Sartor G., Tomasello P., Schebesta A. (2013) Liability and automation: issues and challenges for socio-technical systems Journal of Aerospace Operations, vol. 2, no. 1-2, pp. 79-98, 2013 https://content.iospress.com/articles/journal-of-aerospace-operations/033?resultNumber=0&totalResults=1&start=0&q=author%3A%28%22Tomasello%2C+Paola%22%29&resultsPageSize=10&rows=10

Biography

Paola Tomasello graduated in Psychology in 2006. In 2007, she took a post-graduate degree in Occupational Psychology. In 2018 she took a post-graduate degree in Psychotherapy, with a thesis on Psychopatology and aviation safety. Currently she works as psychotherapist and Human Factors specialist. From 2016, she is Lecturer of Human Factors in Aviation for the Giustino Fortunato University. From 2011 she has been working in Deep Blue srl, a consultancy SME based in Rome, where she is involved as human factors specialist in several EU research projects and training initiatives. Her activity concerns the integration of human performance aspects into safety-critical systems, especially aviation and healthcare domains. She is periodically involved in the preparation and delivery of training courses in the area of Human Cognition and Human Error for the Italian and European aviation organizations. She is also involved in the preparation of R&D proposals for European funding (H2020, SESAR, etc).

paolatomasello@libero.it

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UNDERSTANDING OF LUMBAR SPINE SYSTEM MECHANICS AND CAPACITY: STEP TO LOW BACK ISSUES PREVENTION

Aleksandar Susic

University of Zagreb, Croatia

One of common considerations in physical ergonomics practice is prevention of musculoskeletal disorders with imperative to identify directives that lead to more effective health protection. To ensure safety and wellbeing, creating of appropriate prevention strategies based on relevant parameters are crucial. Regarding occurrence of LBP (low back pain) and correlated costs, thorough knowledge of the functionality of the spine (as well as complete musculoskeletal functionality) is the basis for determining the appropriate recommendations, and also consequent limitations. This knowledge should be holistic as much as possible. The talk will present biomechanical understanding of the lumbar spine system in order to create safety precaution indicators. Findings indicates that evaluation score of personal psychophysical capacity depends on age, gender, anthropometric data and appropriate skills, experience, assignment structure, its intensity and complexity, but not limited to. Actual task analysis will be illustrated *via* compared diagrams of lumbar spine moment that are used to point at critical considerations. In conclusion, safety and wellbeing of individuals requires determination of case sensitive risk factors, limitations and even exclusions. This is considered as most suitable injury prevention and safety implementation strategy that suggests that it is necessary to match task/assignment to person/s that should perform it.

Recent Publications

1. Susic A and Wolf H (2016) Is it Possible to Effectively Implement Ergonomic Considerations in Product Development?. Proceedings of the 6th International Ergonomics Conference, Ergonomics 2016, Zadar, Croatia: 331-336 ISSN 1848-9699
2. Susic A., Zokalj M., Kasovic M. (2013) Estimation of Lumbar Spine Load during Lifting Task Execution. Proceedings of the 5th International Ergonomics Conference, Ergonomics 2013, Zadar, Croatia: 139-144, ISSN 1848-9699
3. Susic, A., Spehar M., Jurcevic Lulic T. (2013) Procedure for Correction of Lifting Task Posture for Injury Prevention. Proceedings of the 5th International Ergonomics Conference, Ergonomics 2013, Zadar, Croatia: 205-210, ISSN 1848-9699

Biography

Aleksandar Susic is a Professor of Biomechanics and Ergonomics with a specialization in Human Centred Design, Biomechanics and Applied Biomechanics in Kinesiology. He is currently an employee of Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Croatia. As Head of Department for Biomechanics and Ergonomics, he is an active consultant in many applications of Applied Biomechanics and Ergonomics. In his latest research he has improved integration of ergonomic criterions into conceptualization and embodiment phases of engineering design that is essential to meet advanced product demands. He has organized two international ergonomic conferences with objective to manage integration of ergonomics into societies, industry and academia during his mandates as the President of Croatian Ergonomics Society. He is interested in further research on ergonomics real life implementation, improvement in product design for consequent elevation of overall life quality.

asusic@fsb.hr

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IMPLEMENTATION OF SLIDING SHEETS IN PATIENT REPOSITIONING

Deborah Alperovitch Najenson

Tel Aviv University & University of Ben-Gurion of the Negev, Israel

Aims: The aim of this work is 1) to examine the effect of using sliding sheets when moving a bed-ridden passive patient on the prevalence of work-related musculoskeletal disorders, sense of workload, burnout and job satisfaction amongst nurses and nursing assistants; 2) to examine the factors influencing the implementation of sliding sheet use in nursing practice.

Methods: An interventional prospective repeated measurement study using self-reported questionnaires, physical evaluation scores of low-back pain, disability and morning stiffness (BADIX), in addition to a qualitative study examining the optimal way of implementing the use sliding sheets. The convenience sample included 52 nurses and nursing assistances (all female) from three internal medicine departments, Bnai-Zion Medical Center, Haifa, Israel. Participants were asked to complete a 5-section questionnaire, 4 times, reporting on basic demographics, neck, arms, shoulders, hands and low back pain disability and an estimation of job satisfaction, workload and burnout at work. Repeated measures ANOVA with Bonferroni posthoc comparisons identified significant factors. A discussion group was formed for the qualitative study.

Results: Neck, arms, shoulders, hands, low back pain and disability decreased and job satisfaction increased after three (end of the intervention phase) and six (end of the follow up phase) months of using the sliding sheets ($P<0.001$; $P=0.041$; $P<0.001$; $P<0.001$ accordingly). Perceptions of the workload and burnout level were not associated with the use of the sliding sheets.

Conclusions: Implementation of sliding sheet use generates a clear influence on the reduction of prevalence rates of symptoms in the neck, arms, shoulders, hands and lower back and increased job satisfaction. Management efforts to maintain ongoing training in order to establish a culture that encourages the use of sliding sheets in patient handling, is crucial in reducing the risk of musculoskeletal disorders and promoting nursing staff job satisfaction.

Recent Publications

1. Alperovitch Najenson D et al. (2010) Low back pain among professional bus drivers: Ergonomic and occupational-psychosocial risk factors. Isr. Med. Assoc. J. 12(1):26-31.
2. Alperovitch Najenson D, Treger I and Kalichman L (2014) Physical therapists versus nurses in a rehabilitation hospital: Comparing prevalence of work related musculoskeletal complaints and working conditions. Arch. Environ. Occup. Health. 69(1):33-39.
3. Alperovitch Najenson D et al. (2014) Rehabilitation versus nursing home nurses' low back and neck shoulder complaints. Rehabil. Nurs. 40:286-293. Doi:10.1002/rnj.172.
4. Kalichman L, Alperovitch Najenson D and Treger I (2016) The impact of patient's weight on post-stroke rehabilitation. Disabil Rehabil. 38(17):1684-1690. Doi: 10.3109/09638288.2015.1107640.
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Biography

Deborah Alperovitch Najenson is a Physical Therapist. Her expertise is Ergonomics. She has completed her PhD from the Faculty of Medicine, Tel Aviv University and Postdoctoral studies from School of Physical Therapy, Ben Gurion University of the Negev, Israel. She lectures in the Department of Physical Therapy at the same university and in the Department of Environmental and Occupational Health, Tel Aviv University, Israel. She does research in the field of ergonomics and guides students in their thesis. She also directs a physical therapy department in a large geriatric hospital.

deborahalp@gmail.com

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TWO FACTORS IN TRAFFIC ACCIDENTS IN YOUNG AND OLDER DRIVERS

Don G Bouwhuis

Eindhoven University of Technology, The Netherlands

In many countries the growth of the older population is seen as an increasing risk factor in motorized traffic. Analyzing the function relating traffic accidents to age group, it appears that, in contrast, by far the great majority of traffic accidents is caused by younger drivers, starting with a peak in the age range of 16-18. While the accident rate after the age of 24 is decreasing strongly, it is at a minimum between 40 and 60. It is only after the age of 70 that accident rate is increasing again, but at a relatively low rate. An interesting phenomenon is that accidents involving a female driver are significantly less frequent than those involving male drivers, by at least a factor of 2, and often even more. This same difference in accident liability is also found in other fields, for traffic it has been shown for flying planes, but also in a vastly different range of jobs in industry- jobs equated for males and females. The difference has been attributed to a different perception of risk. One important factor in traffic behavior, then, is risk perception that evolves over the years, becoming more detailed and comprehensive and supported by years of experience. Both the higher accident rates at young ages and high ages point to another factor, the development of attention. Focused attention only develops relatively slowly with age, and, like visual acuity reaches a plateau around the age of 21. Unlike what is frequently assumed, older people have a higher focused attention level than younger ones, but this can be offset by the interaction of distracting information. New data will be presented that shed light on attentional processes in old and young people, and that also make clear that visual acuity is hardly related to traffic accidents.

Recent Publications

1. Juola J F et al. (1991) Control of attention around the fovea. Journal of Experimental Psychology: Human Perception and Performance. 17(1):125-141.
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3. Bouwhuis D G (2017) Reasons why ergonomics cannot make interactive devices to be user-friendly (k>3), Journal of Ergonomics 2017, 7:195, DOI 10.4172/2165-1000195 .

Biography

Don G Bouwhuis has a background in cognitive science, mathematics and computer science. After a career in industrial research he was appointed Professor of Cognitive Engineering at the Eindhoven University of Technology, The Netherlands. He has carried out research on cognitive functioning in older people, in visual attention, image quality and on the interfaces of truck cabins. He was one of the Founders of the International Society of Gerontology. He has been a Research Fellow at the Cognitive Science Department, University of California at San Diego, the LIMSI (Computer Science Laboratory for Mechanics and Engineering Sciences)-C.N.R.S at Orsay, France, the Technion at Haifa, Israel and GeorgiaTech in Atlanta, USA. He taught at the University of Melbourne, Australia and The University of Technology at Cao Tun, Nantou, Taiwan.

d.g.bouwhuis@tue.nl

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AFTER GERMANWINGS: DO WE NEED A NEW HUMAN FACTOR'S PARADIGM?

Antonio Chialastri

STASA think-tank, Italy

After an accident happens the investigators use some models to understand how it is developed and which are its root causes. Most of the interpretations depend upon the paradigm used. Until now different paradigms led to different interpretations and different countermeasures. The Germanwings case, where a pilot intentionally crashed an airplane full of passengers, is a challenge for the safety scholars. Is this event a black swan or is it a symptom of a broader phenomenon affecting flight safety? This paper address the topic, analysing the evolution of the threats to safety, the countermeasures adopted along the years and the methodological approach needed to cope with these new kinds of accidents.

Recent Publications

1. Chialastri A and Pozzi S (2008) Resilience in aviation in Computer Safety, Reliability and Security, Springer-Verlag, Heidelberg
2. Chialastri A. (2011), Human factor – Sicurezza ed errore umano, IBN editore, Rome
3. Chialastri A. (2012), Human factor – Prestazioni e limitazioni umane, IBN editore, Rome
4. Chialastri A. (2014), Human factor – Il teamwork negli ambienti ad alto rischio, IBN editore, Rome
5. Chialastri A. (2015), Human factor – Il rapport uomo-macchina, IBN editore, Rome.

Biography

Antonio Chialastri is an Airbus Flight Captain with 15000 flight hours. He has a university Degree in Philosophy; Degree in Epistemology; Master of Arts in Bio-ethics. He has published seven books on human factor and safety. He teaches human factor at Rome University, Master in Civil Aviation and has been a Lecturer in other universities among which include- Bologna, Pisa and Messina. He is a Member of the organizing committee at the incoming world IEA Conference that will be held in Florence on August 2018. He also works as a Consultant for different domains: railways, health care, electricity plants and military.

Antonio.chialastri@gmail.com

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CREATING AN ERGONOMIC CULTURE IN COMPANIES: AN APPLICATION IN TURKEY

Ahmet Fahri Ozok

Istanbul Okan University, Turkey

This research is an attempt how to create an ergonomic culture in companies. The amount and duration of efforts can be different from one company to another even in the same country. My presentation tries to explain the necessary steps: 1. education on ergonomics for white and blue collar people. 2. to determine a strategy for initiating a wider and longer participatory process towards workplace improvements. 3. selecting pilot work stations to obtain and concentrate on collecting necessary data about real problems. 4. find applicable solution methods. 5. selecting the most appropriate method for workers and for company. 6. controlling the results. This research shows us also the differences in application methods because of cultural factors in different countries.

Biography

Ahmet Fahri Ozok completed his Bachelor's Degree in Mechanical Engineering (1964) and Master's Degree (1979) from Mathematics Department at the Istanbul Technical University, Turkey. He worked for his PhD at Technical University of Darmstadt under the supervision of Professor Dr. Walter Rohmert and at Istanbul Technical University and completed it in 1973. He served as the President of Industrial Engineering Department and as the Dean of Industrial Engineering and Management Faculty at Istanbul Technical University. He has been at University of Paris 6 in Math-Statistics Institute (1973-1974 academic year); Stanford University (1979-1980 academic year). He is now in the academic staff of Okan University (Turkey) since 2009. He is also the President of Turkish Ergonomic Society. He is a Member of various academic commissions at different universities and he directs some industrial projects as Project Leader. He has a lot of articles in different areas published in scientific journals. He is a Member of Turkish Operations Research Society, German Ergonomics Association, Turkish Mathematicians Association and Turkish German Education and Solidarity Foundation. His research interests: ergonomics, human factors, work study, fuzzy logic, mathematical modelling of man-machine systems.

fahri.ozok@okan.edu.tr