

# **Comparison of the Local Muscular Stress of Men and Women in the Industrial Sector**

**Martin Kába and Ilona Kačerová**

Department of Industrial Engineering and Management

University of West Bohemia

Univerzitní 8, Pilsen, 301 00, Czech Republic

[kaba@kpv.zcu.cz](mailto:kaba@kpv.zcu.cz), [ikacerov@kpv.zcu.cz](mailto:ikacerov@kpv.zcu.cz), [buressm@kpv.zcu.cz](mailto:buressm@kpv.zcu.cz)

## **Abstract**

In today's hectic age, not only people who have a physically demanding job but also people who spend their workday at a computer have an experience with occupational illnesses. This type of activity does not seem to be physically demanding, but for people can be even more dangerous than heavy work. According to Czech Statistical Office the most common occupational disease in the Czech Republic is the carpal tunnel syndrome, which can be caused by limb overloads (over 320 reported cases in 2017) or by vibrations (over 140 cases in 2017). Not only people who works in manufacture, but also people who work in the office can suffer with this illness. In these days the carpal tunnel syndrome is the most common hand disorder and most affected are women. The number of women in industrial companies has been increasing since the economic crisis in 2008. As the data of the Czech Statistical Office shows that in 2008 number of women in industrial companies was slightly over 450 thousand, in 2016 it was almost half a million. The Czech Statistical Office shows international comparison of employment of women and men in industry in 2014. This comparison indicates higher gender equality in industry sector for women in the Czech Republic than in other countries of EU. Compared to average number of employment of women and men in Industry in EU 28 (females 10,9 %, males 31,4 %) the value is above-average (females 22,7 %, males 47,6 %). The carpal tunnel syndrome can be usually evaluated by integrated electromyography (surface Electro-Myo-Graphy). This method is non-invasive and belongs to the experimental investigation methods that allow objective evaluation of neuromuscular activity by the registration of bioelectric potentials. On the muscles of the hand (extensors, flexors) are attached electrodes that sense the local muscular load. The paper is focused on comparison of EMG results on the same working positions operated by men and women. A group of men and women from the Czech population aged 30 to 55 were measured by integrated electromyography and evaluated. During measuring the local muscle stress on the hands of men and women, it was an effort to maintain a similar physical constitution and also age for a quantifiable comparison of the measured values.

**Keywords** EMG, integrated electromyography, local muscular stress, occupational disease, gender.

## **Biography / Biographies**

**Martin Kába** is a PhD. student at University of West Bohemia in Pilsen, Faculty of Mechanical Engineering - Department of Industrial Engineering and Management. His Field of study is Industrial engineering. Study programme: Doctoral study programme in Mechanical Engineering. His Topic of Dissertation is "The impact of an aging population on industrial production". He is also a member of Czech Ergonomic Society.

**Ilona Kačerová** is a PhD. student at University of West Bohemia in Pilsen, Faculty of Mechanical Engineering - Department of Industrial Engineering and Management. Her Field of study is Industrial engineering. Study programme: Doctoral study programme in Mechanical Engineering. Her Topic of Dissertation is "Assessment of psychological and sensorical stress in manufacturing staff."