



**Marta Gluchmanova**

Technical University in Kosice  
Faculty of Manufacturing Technologies with the seat in Presov  
Department of Natural Sciences and Humanities, Slovakia

## Improving the health of workers exposed to sedentary jobs

### Abstract

The aim of the paper is to give information about the prepared project at the Faculty of manufacturing technologies.

**Key words:** university, teacher, sedentary job, responsibility, health.

The Ancient Greeks already formulated the ideal of harmony of balance and physical and mental aspects of man known as *Kalokagatia* for whom physical culture was an integral part of the culture of the society. This ideal was applied only to free citizens. It was essential that the development of mental abilities should be harmoniously combined with all-round physical development and vice versa. Currently we follow the growing trend of exposure to large risks in sedentary jobs and minimal movement. If both young people, and also seniors sitting at a computer all day and have no motion, it can lead to total destruction of their bodies slowly. People are at higher risk for musculoskeletal disorders, obesity, diabetes, cancer and heart disease. It happens that often times we do not even notice that we have long been in a stationary position and sit completely twisted, and finally feel some pain in the neck, behind the neck or in the lumbar spine. All are linked to unhealthy phenomena of individuals, and even the whole society.

The European Union has recently experienced rapid population aging, which is mainly due to increasing life expectancy combined with low birth rates. This is considered as one of the major European challenges in the coming years. That will affect our competitiveness in world regions and thereby economic growth and employment, load that prolong the pensions. They mostly analyze the negative impact of aging on public finances of developed countries, thus constantly increasing costs of health care, retirement pensions, long-term care. Less attention is paid to the impact of aging on the national economy in terms of changes in the volume and structure of supply and demand for products, services, labor and capital. It is closely related to the concept of silver economy, which is based on the silvery hair

color aging population and could be loosely defined as the potential that innovative products and services designed to increase the quality of life in the growing age. More and more people are aware of this growing area that has presented itself in the market thanks to an aging fellow citizens.

New opportunities to rise in prominence for innovative companies that help improve the quality of life of an elderly and the aging population. Therefore, the aging of the population should not be seen only as a threat, but rather as an opportunity that should not be wasted. If we talk about active aging, it should be stressed that the World Health Organization (WHO, 2002) defines quality of life in active aging as a process of creating opportunities and conditions for actively preserving the health, participation in the life and affairs of society - maintaining social relationships and achieving the highest possible level of independence and self-sufficiency of the individual.

In Slovakia, the cost of health care deal with the authors of the international scientific research project AHEAD. Within the project research teams from 18 centers implementing the 16 countries within nearly 4-year research investigated the aging, health status and determinants of health expenditure in the expanded European Union. The most important result of years of research work are summarized in a research study of *Aging, health status and determinants of health expenditure in Slovakia* (Páleník, V. et al., 2012). People over 50 are faced with a variety of biological changes that come with age gradually. There are changes in mobility, flexibility and elasticity. All these changes will need to adapt to future goods and services will be necessary to adapt marketing and customer communication. Aging may further contribute to psychological changes in various areas, such as cognition and function, attitude, mood and emotional changes. Changes in cognitive abilities may lead to a change in memory skills and ability to process information. (Páleník, 2012, p. 62).

Although there is a general consensus that technology can make an aging population advantage, at present we have little information on how to achieve this. To this day, however, in many countries the impression that the services market for silver is mainly a matter of government programs, which discourages many companies entering this market potential. However, the prospect of a new market segment is visible to many universities that seek to contribute to this field, not only in theory but also in practice. Such an example is the Massachusetts Institute of Technology who created back in 1999 MIT AgeLab, where they try new ideas and creative ideas to translate into practical solutions that help improve people's health and allow them to lead an active life as long as possible. AgeLab formed a partnership with the private sector to easily transform theoretical ideas into practical solutions for the elderly.

In Slovakia, we can mention the similar initiatives, the European project Mona (ambient intelligence in the service of the mainstream), where the Faculty of Mechanical Engineering, Technical University of Košice is involved. This project showed how information-communication technology services mainstream in Eu-

rope may offer accessible and useful services, as well as modern technical aids of elderly population in an effort to improve their quality of life. In the area of innovation that have an impact on our health and proactive behavior should be given more attention. The Innovation Union is one of the flagship initiatives of the Europe 2020 strategy, which is intended to stimulate and accelerate innovation in Europe and help remove barriers that prevent the penetration of good ideas to market.

Health and wellness is not just a matter for young people but also the elderly. In young growing emphasis on healthy and active lifestyle for older and it's an effort to preserve the image of „Forever Young“, trying to lead an independent and mobile life. Council of the European Union as well as meetings of the European authorities have in mind that it is the group of people aged over 50 is the fastest growing in the EU and directly or indirectly use the term silver economy and realize its potential. According to the resolution of the Council of the European Union it needs to be adapted to the needs of older creation of specific goods and services that will result in increased employment, along with economic growth. It realizes at the same time increasing diversification in this consumer group, so it wants to encourage research in this area in order to provide Europe with an example of a working silver economy. As a priority objective set itself to achieve growth during this decade, characterized as a smart, sustainable and inclusive. This includes the promotion of the knowledge economy and innovation (smart growth), ensure sustainable growth and high employment (Páleník, 2012, p. 164). Within the health needs of people we can sum up in the following aspects: the absence of disease, ability to live without limits and adequate social support system. It is also believed that a well-informed patient will be more responsible approach to their lives and be more active in the field of health. At present, the Slovak government wants to implement a number of measures for teachers. One of them should be the improvement of the healthcare services they would like to implement in the coming years. This is due to a sedentary lifestyle teachers who unfortunately is a negative sign of their health. At present one in five Slovak suffer from chronic back pain. Prolonged sitting has numerous negative effects on the muscles, joints and circulation. The spine is suffering the most because it is built for movement and not for long stiffness. Bad posture when sitting is the most common cause of back pain.

Among the experts were naturalized term that refers to the current (also the teaching profession) as „indoor“ generations, because they spend most of the time between the four walls. Employers sometimes offer their benefits that improved the quality of life and therefore they want to increase the motivation, loyalty, quality and quantity performance of its employees. Benefits as above-standard medical care is rarely provided. This fact was the reason why we decided to prepare a project at the Faculty of production technologies related to the health of employees with sedentary named *Study of the impact of the integration of physical activities and mechanotransductional techniques to improve the health of workers exposed to the sedentary behaviour (in national and public-benefit organizations)*. The authors of the research team conclude that one of the three highest risk factors for our

population is poor / no physical activity which, in interaction with other risk factors not only affects the health of individuals and population but also the economy of the whole country. Alarming data for Slovakia is a growing trend of completely physically inactive population of young people. The study aims to implement social-behavioural research through integration of motion, recovery and rehabilitation activities into work environment of people exposed to long-term sedentary. Creation of scientific research team and its incorporation to the solution of the priority areas of European socio-political framework Health 2020. The establishment of workplace which supports health, development and integrity by eliminating one of the main risk factor influencing the occurrence of non-communicable lifestyle diseases, physical inactivity factor or lack of physical activity. The main objective of the project is to create a workplace supporting health, development and integrity of physical activities, thereby eliminating one of the main risk factors influencing the occurrence of non-communicable lifestyle diseases, physical inactivity factor or lack of physical activity. Another partial objective of the research team is to develop a methodology for personalized plans for physical activity and mechanotransductional biomechanical algorithms (for faster recovery and prevention of injuries) and integration of these methodologies to the therapy of probands to improve movement patterns, improve posture-of posture, coordination, strength, as well as the other parameters and visualization of changes in postural, muscular development in static condition, spatial scanners will be used. Thanks to the 3D surface digitization of physical parameters of the individual we will be able to track changes in physiognomic parameters, external body peace without subjective mistakes which is another of the partial objectives of the project.

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