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Improving Lifestyle of Elderly Through Wearable Devices and IoMT

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The projections of the share of the EU's population over 65 years old show an increase of 31,3% by 2100 while the working age population (ages 15-64) is likely to decline. The healthcare costs are expected to grow at the rate of 5 to 6 percent annually, where the largest part of the growth is associated with aging and consequent higher incidence of chronic diseases and multiple impairments to physical functions. The consideration of biological age (compared to chronological age) of a person, based on several biomarkers with enable mathematical modeling, has been recently introduced for estimation of the aging process. Biological age id described by a number of physiological, psychological and behavioral variables that continuously change but may be acquired by continuous monitoring of vital signs and behavior patterns, detection of hazardous events, tracking of social inclusion of the person and even environmental data. The acquired data is then used for calculation of health risks and potential danger of unwanted events. Emerging technologies that are already on the market or being currently developing will enable substantial change in health care and social environment. They include wearable and IoT (or already well-defined Io Medical T) technology. Though many wearables are still considered consumer products, by adding smart algorithms for wearable data analysis, companies are developing them and associated apps in direction of increasing accuracy and reliability of the gathered data and transferring their functionality to the category of medical devices. Active implanted and stationary medical devices are being added the connectivity function so that they became networked as well. Artificial intelligence is added to process the „big data" and recognize relevant medical outcomes. From the point of view of the users, the concept needs to proof their minimal disruption and proven usefulness and benefits whereas from the point of view of the health care system, the feasibility of integration and acceptable costs are the main concerns.

In the presentation, results of our research of monitoring activities of daily living, controlled physical activity during exercising, fall detection and short time glucose prediction will be presented.