Selected Central Findings

(1) Old age is becoming younger

A direct comparison of the BASE-II data and its predecessor's data of the early 1990s revealed that cognitive functioning and well-being in old age are now maintained for a longer period: Today's 75-year-old are cognitively fitter and happier than the 75-year-olds of 20 years ago were. These findings support statements that the rise in life expectancy is accompanied by an increase in years of health, at least for 60- to 80-year-olds.

(2) Old age is becoming more independent

On average, today's 75-year-olds also feel less lonely and rate their lives as less externally controlled than 75-year-olds did 20 years ago. Improvements in health and general increases in educational levels achieved over the past decades were taken into account in these analyses.

(3) The neighborhood is important for good aging

Health and well-being are related to personal mobility (in this case: access to public transport) and access to doctors in close vicinity. Furthermore, social cohesion in the neighborhood plays an important role for older adults – in contrast to younger and middle-aged adults. These findings are of great significance for urban development and municipal policies. They show how health and well-being can be strengthened in living environments.

(4) Socially active elders are more contented and are better at remembering other people

The more often older BASE-II participants are socially active, the higher their general life-satisfaction is. The extent of social activities is related to facets of memory performance that are important for social exchange such as face and name recognition. Openness for new experiences is also linked with memory. What is cause and what is effect needs to be examined in further assessments. For example, good memory is necessary for orientation in space and time. Memory decline could lead to people losing confidence in their capacity to deal with new surroundings, and thus to their preference for familiar situations. Equally, getting to grips with new information every day could train people's memory.

(5) Sports help people to age well I

„If you rest, you rust," and „ Healthy mind in a healthy body." These apparent truisms can also be scientifically confirmed, at least in part. Lung function measurements provide information about cardiovascular health. Additionnally older BASE-II participants with good lung function show better learning and memory performance.

(6) Sports help people to age well II

The length of chromosome ends, the telomeres, is regarded as a marker for biological age as chromosomes become shorter with increasing age. The degree of shortening is also influenced by lifestyle factors. In the BASE-II analyses, a comparison between physically active and inactive participants revealed that those who had been physically active for at least ten years before being assessed had longer telomeres. If sports activities were restricted to young adulthood, there was no association with telomeric length at the ages of 60 and over – a further indication of the positive effect of continuous sports activities.

(7) Unrecognized health problems and disorders are frequent in old age

Vitamin D deficiency increases the risk of osteoporosis and bone fractures. More than half of the older BASE-II participants, most of them women, lacked vitamin D. This is surprising because older people often self-medicate with vitamin preparations. Thirty percent of diabetes cases were first discovered in context of the BASE-II assessments. It is important to find out more about these people's everyday behavior regarding their diet and physical exercise. Early diagnosis – perhaps within the framework of regular check-ups by family practitioners – would increase the chances of treating such illnesses before severe damage occurs.

(8) Some (older) people are always happier than others

Initial analyses of 1260 genome-wide datasets indicate that the extent of general life satisfaction is likely to have a genetic basis. Two genes that have not been reported in this context so far were identified. They are either directly or indirectly involved in the development and functioning of neurons in the brain. Even if today's older people are happier than those of 20 years ago (see #1), there will always be some individuals who are happier than others on genetic grounds. This is probably the case independently of the respective age of life.

(9) Discovery of gene mutations causing heart attacks

In a multidisciplinary study also including genetic data of BASE-II participants, previously unknown gene alterations (mutations) were identified as a trigger of heart attacks (myocardial infarction). Initial analyses indicate that the mutations had an effect on platelets (thrombocytes). This leads to an increased agglutination of the platelets and thus to an increased risk of myocardial infarction.

(10) Small molecules in the brain play a role in memory

Memory performance and the risk of Alzheimer's disease are influenced by genetic factors. For the most part, the underlying biochemical mechanisms are unclear. Initial BASE-II findings now suggest that the genetic associations can be linked to the effect of so-called "microRNAs" (i.e., messenger substances that safeguard the correct functioning of brain cells), at least to some degree.

(11) Mutations in the immune system increase the risk of Alzheimer's

In the largest study of its kind worldwide, a genetic alteration (mutation) in the TREM2 gene could be established as a risk factor for Alzheimer's disease. The affected gene is probably involved in the regulation of the body's immune response. Additional examination of three further brain disorders such as Parkinson's disease showed that the analyzed changes only affect the risk for Alzheimer's disease

(12) Status of the immune system can be determined using biomarkers

In BASE-II, biomarkers with which one can assess the status of younger and older people's immune systems were investigated in blood samples. Analyses have now revealed that these immunological biomarkers correlate with cognitive functioning and grip strength, by means of which, in turn, conclusions about generalized ageing and longevity can be drawn. One can hypothesize that a combination of several immune parameters has a significant influence on healthy aging, perhaps via chronic inflammation. Inflammatory status is influenced by infections with persistent viruses that people can carry without knowing. Interestingly, these occur more frequently in certain socioeconomic groups of the population than in others. This may be related to findings that the immune system of socioeconomically disadvantaged younger adults has already „aged“ more than that of less disadvantaged groups because they are more likely to be infected with such viruses.

(13) Reduced muscle mass increases the risk of frailty

More than a third of the 1343 participants already had symptoms of frailty. This presents as fatigue, weakness, slow walking, and low levels of physical activity, and thus reduced mobility, among others. An increased risk of falling is also typical. Assessments showed that more than half of the affected older participants in BASE-II had a previously undetected reduction of muscle mass, that is, sarcopenia. Sarcopenia is accompanied by a 2.4-fold increase in the risk of frailty. Therefore, medical check-ups should always include an evaluation of muscle mass.

(14) Zinc deficiency is linked to depressive moods

A too low intake of vitamins or trace elements is discussed as a potential cause of depressive mood. In almost 20 percent of participants we detected a lack of zinc in their blood samples that was correlated with depressive moods. Participants taking up more zinc with their diet were less often affected by depressive symptoms. Thus, sufficient zinc intake presumably has a preventive effect.

(15) Impaired lung function is more frequent in people with a disorder of their metabolism

Metabolic disorders such as hypertension, increased blood fats, and diabetes, or their precursors are subsumed as „metabolic syndrome.“ In total, 36 percent of the older participants were diagnosed with a metabolic syndrome. In the BASE-II assessments, it became clear that impaired lung functioning and metabolic syndrome are related: The proportion of participants with impaired lung functioning was significantly higher among study participants affected by metabolic syndrome.

The BASE-II findings contribute to the establishment of strategies of action for demographic change, the better recognition of the limits of shaping senescence, and furthering of knowledge about the prerequisites of an independent life in old age.