Summary

The stomatognathic system (SS) is a group of morphologically and functionally integrated tissues of the oral cavity and the facial part of the skull. The mandible, the masticatory muscles and the temporomandibular joints are the basic dynamic unit of this complex. The stomatognathic system is an example of a biological functional circuit. Its functioning is the result of extremely complex morphological and functional relationships taking place under the control of the nervous system. A relatively small number of studies comprehensively dealing with the above issues became the motivation to undertake research activities in this area.

148 young adults aged 17-25 were included in a detailed examination of the stomatognathic system. The inclusion criteria for the study group were full permanent dentition, no signs of the stomatognathic system dysfunction, no previous orthodontic treatment, no previous craniofacial injuries and no signs of growth disharmony of the craniofacial complex. Each of the participants qualified for the research project was subjected to a detailed diagnosis of the stomatognathic system, including a physical and subjective examination, and a series of additional examinations. Bone morphology was determined by the use of lateral cephalograms along with their detailed cephalometric analysis using the Ricketts' and McNamara's method. The functional diagnosis included surface electromyography tests (BioEMG II) and digital evaluation of occlusal conditions as a function of time (T-Scan III). The results were then subjected to statistical analysis taking the type of probability distribution of the obtained data into account. The conducted research determined the physiological character of the morphological and functional relationships occurring in the area of the stomatognathic system.

In the light of the conducted research, it was found that the morphological and functional interactions of the SS area are multifactorial and it is impossible to indicate the leading parameters that modulate its functioning. It has also been shown that the reference values of the Ricketts and McNamara analyses do not apply to populations of a different size, age structure and ethnic origin than those on which they were developed. Moreover, it has been proved that T-Scan and EMG tests are the complementary methods of SS diagnostics. However, their results should be interpreted separately. A relatively high sensitivity of the VERT index was also demonstrated, which seems to be a clinically transparent parameter characterizing the biotype of the face of the examined persons, regardless of their gender and interdental relations. In the course of the discussion, it was also shown that biomechanical interactions may not be the only form of the relationship between bone and muscle tissue in the area of the

stomatognathic system. Biochemical relationships modulated by humoral substances (myokines and osteokines) play a non-important role in this process. Therefore, it seems necessary to continue research on the morphological and functional relations of the stomatognathic system in the light of more and more documented endocrinological reports.