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Review of the doctoral dissertation by Xenia Paula Kyriakou entitled „Entheseal changes in a reference skeletal collection from Cyprus. Prospects for reconstructing activity patterns in prehistoric and historical societies”.

(Doctoral thesis carried out at the Faculty of Archeology of the University of Warsaw under the supervision of prof. Arkadiusz Sołtysiak and dr Elżbieta Jaskulaska, Warsaw, 2022)

Reconstruction of conditions and style of life of historical human populations is the essence of modern bioarchaeological and anthropological studies. Therefore, analyses of various morphological features of human skeleton which contribute to our better knowledge of their character, intra- and inter-population variability and their development with particular focus on environment influencing their shaping is absolutely necessary. These features include, among others, the ones related to osteoblastic and osteoclastic of bone cells in places of ligament attachments, muscles first of all, which are responsible for active parts of our movements. It is regarded that these features development is directly connected with biomechanical forces acting on bones and their parts. It is also suggested that their stronger development can be a symptom of significant skeleton strain resulting from predominant forms of physical activity enforced by particular strategies and ways of management characteristic for human communities in time and space. However, research also shows that these relations are very complex and interpretation of frequency and expression of skeletal markers of biomechanical stress is exceptionally difficult and can be faulty sometimes.

The Authoress of the reviewed PhD thesis tries to deal with this very problem. The work subject seems to be inherent and contributing to our knowledge concerning ways and possibilities to reconstruct historical life on the grounds of human bone remains, excavated in archaeological sites, delivering new and interesting information in this matter. Another fact deserving attention is that Xenia Kyriakou also tries to establish connections between enthesopathy and other pathological changes like, e.g. trauma signs, degenerative lesions or diseases of overgrown bone tissue, which is not an easy task.

The PhD thesis reviewed by me consists of 208 pages and numerous illustrations (photos of studied characteristics with detailed accounts placed at the end of the work). Unfortunately, the copy at my disposal has relatively small grey pictures which practically do not let me observe correctly the distinguished expression levels. The text includes also tables which clearly demonstrate

the analyzed data. The work is finished with complementary diagrams for performed statistical analyses, and illustrating observed frequency of studied features in the distinguished groups (regrettably, too small print character is illegible in some diagrams).

The paper is divided into logical parts – chapters and subchapters which sufficiently and clearly describe particular and most essential issues related to the subject. These are: definitions of biomechanical stress, muscles' building and functioning, etiology and pathogenesis of enthesopathy as well as age and sex impact on their formation. The Authoress moves perfectly around in these problems using adequate conceptual apparatus demonstrating her perfect theoretical preparation and skills to carry on such studies.

The paper also characterizes social-political and economic history of Cyprus, where bone material used for research comes from. In this case, it is an indispensable account of life environment (social-cultural background) of populations which skeletons were examined and which became a base for performed analyses' results (variability, observable expression, sexual dimorphism). The Authoress made qualitative, quantitative, individual and complex analyses for the features.

The chapter relating comprehensively variants of research methodology of other scientists is in my opinion valuable for the work. The Authoress presents again high level of her preparation and substantive knowledge to perform research and interpret the results obtained, completed with rich literature query.

The work part referring to detailed account of skeleton collection belonging to persons with identified sex, age at death, and delivering other information, which in case of remains coming from archaeological sites are not known, is very important. The Authoress used in her studies a skeleton collection from exhumation of modern burials in Cyprus. On the one hand it is a great value of the material, because we have absolutely reliable information concerning sex of the dead person, year of birth and death (age). On the other hand, that 'contemporariness' of the studied material is its greatest disadvantage. Biomechanical strain patterns and morphological reactions appearing at present do not have to be identical (and of course they are not) with the ones occurring in the past, particularly in prehistory (e.g. Paleolithic and Neolithic). It is the problem and mistake of all works based on studying skeletons of present populations and attempts to transfer conclusions from the observations to describe historical populations. These are the limitations which the Authoress seems to be absolutely aware of.

The work part focusing on critical dialogue with research results and conclusions obtained by other scientists sounds exceptionally interesting and leads to own original statements, based on her own considerations and observations from the studied material achieving the objectives of the work. Presented conclusions form logical summary of the vast look at the problem of enthesopathy within a human skeleton and their cognitive value in retrospective approach. The conclusions are of a descriptive character and take up 4 pages, continuing earlier discussion. In my opinion they could be presented in a shorter form, e.g. cumulating them in brief subject points, being the essence of the paper and the most important directions for other researchers starting that type of analyses.

Careful statistical elaboration of the obtained data presents a good level and is worth attention. Statistical tests used are sufficient and adequate to the character and structure of the data and the set goals. Ipso facto the Authoress proved to be well prepared for this kind of studies, which

is in my opinion very important and worth stressing, as it is not a rule in works from archaeology and bioarchaeology. Apart from descriptive statistics values, the Authoress also used statistical tests, which no doubt contribute to accuracy, reliability and reasoning strength.

Literature was selected and used correctly and effectively. Bibliography list is exceptionally rich and contains the crucial publications on the subject. The Authoress knows and quotes the achievements of the most significant researchers including: medical doctors – clinicians, anthropologists, paleopathologists, and bioarchaelologists, what emphasizes the study interdisciplinary character.

The paper is written in a correct language with carefulness in preparing the last text version, with clear and logical composition. The detailed contents, a list of tables, diagrams and illustrations with information directing to certain passages in the text easily is praiseworthy.

Summing up, I can state that the PhD thesis of Xenia Kyriakou should be estimated **POSITIVELY** and **very highly**. It is first and foremost the result of perfect scientific preparation (theoretical and practical) of the Authoress and her scientific maturity which is demonstrated in a high substantial value of the paper itself. Undoubtedly, the Authoress must have put a lot of work in obtaining the data – over 400 skeletons were examined and several dozen characteristics were analyzed, what should be also appreciated. That must have been strenuous and difficult job, requiring perfect knowledge of detailed anatomy of human musculoskeletal system. Tests, analyses and data elaboration are made with great competency. The work has significant cognitive value concerning bone changes etiology of enthesopathy character and its significance (although limited) in studies concerning physical activity patterns and biomechanical stress of human musculoskeletal system. The work contributes substantially to research in reconstruction of life style and conditions of historical human populations.

Taking all the above into account, I direct my suggestions to the Examination Committee to **accept** Ms. Xenia Pauli Kyriakou **to further stages of PhD degree examinations**. The PhD thesis reviewed by me **fulfills all the statutory requirements**.

