STATEMENT

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Regarding the procedure for defense of a dissertation for obtaining the scientific degree "Doctor of Science" of Dr. Elena Kirilova Kirilova on the topic: "Development of a specific national model for predicting osteoporotic fracture risk and assessment of bone mineral density of axial skeleton with radiofrequency echographic multi spectrometry (REMS)".

Dr. Kirilova's work is dedicated to the socially significant disease osteoporosis and the related fracture risk. An important reason for the study is the lack of a specific national model for fracture risk assessment using the well-known "FRAX" model, as well as data for estimating the bone mineral density (BMD) of the axial skeleton through innovative Radiofrequency Echographic Multi spectrometry (REMS). There is currently no assessment of differences in age, height, weight and BMI between women with normal BMD, osteopenia and osteoporosis of the lumbar spine and femoral neck with REMS. It is not clear whether the number of menopausal women is significantly higher in the groups with osteopenia and osteoporosis of the lumbar spine and femoral neck established by REMS, compared to their number in the group with normal BMD. There are no studies comparing body fat and basal metabolic rate (BMI) between the groups with normal BMD, osteopenia and osteoporosis of the lumbar spine and femoral neck.

established with PEMS, as well as to compare BMD and T-score between left and right femur with REMS.

The study of Dr. Elena Kirilova, PhD includes a sample of 324 women. The dissertation is written in a volume of 225 pages. The abstract is 64 pages and is an objective reflection of the material presented in the dissertation.

The literary review is comprehensive, critical and in-depth and covers 478 literary sources - 8 in Cyrillic and 470 in Latin. Relevant conclusions were made and unresolved issues were highlighted.

The purpose of the dissertation is clearly stated. The tasks are precisely defined and correspond to the set goal. The development methodology is adequately structured. The sample of patients is well selected, ensures the objectivity of the study, the reliability of the conclusions and is sufficient for statistical processing and making appropriate conclusions. The material is very well illustrated with 8 tables, 27 figures and 14 appendices, which illustrates the importance of the methods used. The specific settings of the parameters in the ultrasound scan with REMS are explained in detail.

Of significant practical value is the national "FRAX" model, published on the website of the University of Sheffield. A specific model by REMS is also proposed, which assesses the probability of a T-score <-1 SD of lumbar spine (LS) and left femoral neck (FN) in the presence of a certain risk factor. This model is useful in determining the need for REMS testing. For the first time, a specific model has been developed to predict FRAX for a large osteoporotic fracture (MOF)> 20% by REMS and thus the need for therapy can be assessed.

The dissertation ends with 11 main conclusions, which summarize the results of the observations. 9 contributions are outlined, emphasizing the merits of the dissertation.

Dr. Kirilova has presented a total of 19 publications, of which 15 are in full text and 4 are reports presented abroad. Of the publications, 10 have been referenced in Scopus or the Web of science, and the other articles have been published in scientific peer-reviewed journals.

In conclusion, it can be summarized that Dr. Elena Kirilova, PhD has studied a precisely selected sample of patients, has correctly analyzed the results and has thoroughly compared them with the available data from the world literature.

The requirements of ZRAZP, the regulations for application and the regulations, according to the regulations of MU-Plovdiv for acquiring the degree "Doctor of Sciences" are met. Due to the above, I confidently give my **positive assessment** of the scientific work and propose to the Scientific Jury to **award the degree of "Doctor of Science"** in the Doctoral Program Rheumatology in the professional field 7.1. Medicine of Dr. Elena Kirilova Kirilova, PhD.

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Assoc. Prof. Dr. Kiril Yablanski, PhD