THE OSTEOPOROSIS IN THE AERONAUTICAL PERSONNEL: MYTH OR REALITY?

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Abstract

Introduction: BMD measured using the DXA method is significantly low in the aeronautical personnel and the average T-Score indicates the occurrence of osteoporosis as far as the non-aeronautical personnel is concerned, this value is within normal limits. Osteoporosis is highly probable to occur and even to aggravate if more risk factors are involved. Whereas some of these factors cannot be controlled (age, sex, race, height, endocrine disorders or osteoporosis in antecedents), other risk factors can be modified according to the kind of lifestyle that we embrace (weight, physical exercises, etc.) or the type of diet that we follow (consumption of tobacco, alcohol, coffee, dairy products, sweets, meat and meat products). In the present study I have attempted to show that the occurrence of osteoporosis in the aeronautical personnel mainly stems from the typical flight activities and not from factors usually associated with this disease.

Material and method: Both, military and civil aeronautical personnel that performs the annual medical checkup at the National Institute of Aeronautics and Spatial Medicine "Gl. Dr. Av. Victor Anastasiu" in Bucharest were selected according the inclusion and exclusion criteria. Thus, the group under scrutiny here consists of 51 individuals. At the same time, we have investigated a witness group of 34 non-aeronautical individuals.

Results: By means of statistical methods, the present study proposes a comparative analysis of the two groups, evaluating 23 risk factors that contribute to osteoporosis: biological factors (age and sex); anthropometric factors (weight and height); lifestyle and nutrition (consumption of tobacco, alcohol, coffee, dairy products, sweets, meat and meat products, and medication that can contribute to osteoporosis); physical activities, endocrine disorders and a family history of fractures or osteoporosis. This evaluation will be performed in order to find out whether there are significant differences between the aeronautical personnel and the non-aeronautical personnel, which might explain the changes in bone mineral density. We have also analyzed the aeronautical personnel based on specific factors (the number of flight hours, years of service devoted to the aeronautical activity, and the aircraft type involved in this process). We shall later correlate this analysis with the frequency of osteoporosis in order to decide whether they are interdependent.

Conclusions: Out of 23 risk factors that specifically contribute to the development of osteoporosis, only 3 factors (alcohol consumption, dairy consumption, and lumbar pain) made the difference between the two groups from a statistical point of view. These differences do not modify the scientific quality of future research study results because:

- it is generally acknowledged that alcohol consumption might develop osteoporosis, but the difference between the two groups is inverted, that is those who consume less alcohol (the aeronautical group) have a diminished BMD;
- diary consumption meets the requirements: it is diminished in the aeronautical personnel but it alone cannot take the responsibility of high BMD differences;
- frequent and intense lumbar pain in the aeronautical personnel are explained by the specificity of the daily professional activities; they are not related to osteoporosis because:
  ⇨ osteoporosis is painless;
  ⇨ those who present lumbar pain do not have fractures and do not feel any vertebral pressure, which might have represented the only possible connection between osteoporosis and pain.

Considering that the study of the risk factors proved that the groups are homogenous and compatible from a statistical point of view, without presenting differences in risk factors, the differences of BMD are due to that specific feature which distinguishes the two groups and which is known as the **flight activity.**