

# **Sport und Osteoporosis**

## **Lack of exercise in childhood and youth as a cause of the development of osteoporosis – An empirical study**

---

### **The Problem**

Physical exercise in general is an important precondition for a healthy bone structure. The investigation described below applies the methods of social research to deal with the question of the importance of sport and exercise in general for the prevention of osteoporosis.

### **Methods**

- A system of categories based on biographical data was developed according to the medical-pathogenetic risk factor model.
- Forty-one female patients were interviewed without previous knowledge of their bone density.
- The amount of physical activity in each patient's childhood was evaluated and registered in figures.
- Their measured bone density values were obtained.
- Two groups of 20-21 patients were formed according to the split-half system. Both groups were similar in respect of their bone density.
- For one of the groups, the values obtained for the two named categories were fed into a computer programme (SYSTAT) together with the measured bone density values.
- According to the standard procedure of MULTIPLE REGRESSION ANALYSIS the computer programme was used to obtain a calculation formula, which made it possible to estimate the bone density.
- Estimated and measured bone densities were analysed for significant differences.

### **Results**

The linear estimation formula obtained according to the named statistical procedure is as follows:

$$\text{Estimated bone density} = 0.224 \times \text{category 1} + 0.113 \times \text{category 3} + 0,669$$

(category 1=sport in family and home environment in childhood and youth; category 3=sport at school)

It was shown that the patients' biographical data could be used to make a diagnostic estimate in respect of osteoporosis which corresponded very significantly with the level of osteoporosis obtained by osteodensitometry. This is illustrated by diagrams showing the estimated and actual bone density. In contrast, other factors occurring in the biography such as illnesses or diet in childhood and adulthood had only a minor or no predictive value.

### **Conclusion**

1. Sport in the family and home environment in childhood and youth, accompanied by sport at school are an extremely important factor in the development or prevention of osteoporosis.
2. A patient's biography has a high predictive value for osteoporosis. By means of a matrix obtained from biographical data the risk of osteoporosis can be estimated with a high degree of probability, as the extreme correlation with the results of the bone density measurements demonstrate.
3. This has consequences for the promotion of sport in childhood and youth, since sport at this age has been proved to play a significant role in the prevention of osteoporosis.
4. Physical exercise in childhood and youth is the most significant individual factor for bone density in later life. Sport in the family and home environment together with sport at school are extremely important for the prevention of osteoporosis. Both authorities and parents should make increased efforts to promote school sport and other sporting activities in order to provide their children with the necessary opportunities for physical exercise, which will protect them from osteoporosis.