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ECR 2024 / C-21095

Comparing Total and Regional Bone Density in Male Adolescents with different Body Mass

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Purpose

During childhood and adolescence, the increase in bone density results in specific maturational changes to the skeleton. This is a crucial factor for healthy development and maintenance during adult life, but also a critical determinant of osteoporosis later in life. Subjects who reach a higher Peak Bone Mass after adolescence have a protective advantage against the inexorable decline in Bone Mineral Density (BMD) with advancing age. Approximately 60 to 80% of the variance in peak bone mass depends on genetic factors; other determinants include modifiable factors,...

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Methods and materials

Bone mineral content (BMC) and density (BMD), lean soft tissue, and fat tissue were assessed using dual-energy X-ray absorptiometry. Anthropometric measures such as stature, sitting height, body mass and six skinfolds were also measured. Mann Whitney test was performed to assess correlations. Descriptive statistics consisted of the median, standard deviation, maximum and minimum. Comparison between overweighted and normal-weighted was performed using t-tests for independent samples.

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Results

Overweight (n=12) subject exhibit higher BMD for the whole-body ($1,110 \pm 0,137$ vs. $0,967 \pm 0,166$) and specific regions of the skeleton than normal weighed (n=27) except for the upper limbs ($0,731 \pm 0,029$ vs. $0,741 \pm 0,160$) and the femoral shaft ($1,144 \pm 0,090$ vs. $1,122 \pm 0,200$). The mean mass for overweighted subjects was $73,8 \pm 10,5$ kg and for normal weighted $46 \pm 13,8$ kg. Body composition by DXA showed that overweighted subject exhibit higher Fat Mass (FM) for the whole body ($28,2...$

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Conclusion

Excess body weight positively affects BMD in the entire skeleton of the young individuals present in this study, with the exception of the upper limbs. The absence of BMD supremacy in the overweight group for the upper limbs may be related to the lack of load on them, which is not seen in the lumbar region or lower limbs that have to support a load. diet was also slightly higher in overweight individuals, which may contribute to the increase in BMD, but without significant values....

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Personal information and conflict of interest

J. Pinheiro: Nothing to disclose L. P. V. P. V. Ribeiro: Nothing to disclose M. Silva: Nothing to disclose

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Fig 1: Sample Description



Fig 2: Sample Body Composition and Lean Soft Tissue



Fig 3: Sample by Body Mass



Fig 4: DXA Body Composition by Body Mass

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