to risk group with decreasing of growth rate, skeleton size and insufficient content of mineral in cortical layer. The application of national standards made it possible to establish insufficient mineralization of tubular bones in 9.8% of newborns, 10.2% of children of first year of life, 10.8% of two-year-old children and in 12.5% of three-year-old children. Besides, it is proved that under value of speed of sound less than -1SD significantly more frequent low physical development and body height less than 10th percentile were observed (p<0,05). This pattern is observed in older age and especially in children with severe chronic pathology effecting linear growth. Therefore, monitoring of age-related mineralization of bones using method of quantitative ultrasound examination makes it possible to form risk group with disorders of physiological processes of mineralization of skeleton and linear growth for benefit of practical significance.

Key words: children, quantitative ultrasound examination, mineralization of skeleton, linear growth.

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## **BROWN ADIPOSE TISSUE IN HUMANS: PRESENCE AND ACTIVITY**

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Over the past 7 years the interest in brown adipose tissue (BAT) has increased dramatically due to several bright publications in which it was shown that active BAT is found not only in infants but also in 70-80% of adults. In animal models, the efficiency of BAT in the prevention of the obesity and type 2 diabetes has been proven. Therefore, when in January, 2012, a hormone IRISIN was discovered, which is produced by muscles during their activity and stimulates transformation of white fat cells into BAT cells or similar ones ("beige" ones), expectations have been raised on the use of certain therapeutic techniques for the increase in the amount of active BAT in adult humans. It is shown that the production of irisin in muscles occurs both at movement, and at thermogenic shivering in cold conditions. To date, it became apparent that there are at least three varieties of BAT, differing in origin (from different progenitor cells), in the ratio of active biochemical mechanisms and methods of activation. Moreover, it is clear that the amount of BAT in the body itself and even the content and activity of specific for BAT protein UCP1, uncoupling oxidation and phosphorylation, do not reflect the real functionality of the normalization of metabolic processes. It is likely (and this possibility has been widely discussed in the literature of the past two years) that, despite the unified mechanisms for energy dissipation, known today as 3 options BAT fundamentally differ in their function. According to one hypothesis, the original version of BAT, available in neonates and continuing in a small number of adults, provides thermal homeostasis; "Beige" version of BAT, formed under the influence of a muscle hormone irisin, is far more widespread and is involved in the maintenance of carbohydrate homeostasis and thus is a factor in the prevention of obesity and diabetes. The third option - "brite" - also, apparently, depends on the irisin influence, but is intended to solve the problem of homeostasis during intense muscular activity due to its ability to oxidize lactic acid. As far as the functioning of these options overlap and whether they can be compatible solutions for such different homeostatic problems is an issue to the further studies.

Key words: brown adipose tissue; irisin; homeostasis; adult humans; functional activity

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