

# INFLUENCE OF SEXUAL AND PHYSICAL DEVELOPMENT ON STRUCTURAL-FUNCTIONAL STATE OF BONE TISSUE [...]

XI Zjazd Polskiego Towarzystwa Osteoartrologii i Polskiej Fundacji Osteoporozy

V Krakowskie Sympozjum Osteoporozy

Kraków 27-29.09.2001

Streszczenia:

wersja polska

Materiały kongresowe: STRESZCZENIA, s152-153.

Druk: Drukarnia Skinder, ISBN – 83-904008-5-5

wersja angielska

Osteoporosis International 2001; vol. 12 (Suppl 1), s37.

**P069**

**INFLUENCE OF SEXUAL AND PHYSICAL DEVELOPMENT ON STRUCTURAL-FUNCTIONAL STATE OF BONE TISSUE IN PRE- AND PUBERTAL GIRLS**  
(WPŁYW ROZWOJU PŁCIEWEGO I FIZYCZNEGO DZIEWCZĄT W OKRESIE POKWITANIOWYM I PRZEDPOKWITANIOWYM NA FUNKCJĘ I STRUKTURĘ TKANKI KOSTNEJ)

—  
V.V.Povoroznjuk, Ye.D. Klotchko, T.V. Orlyk;

*Institute of Gerontology, AMS Ukraine; Ukrainian Research Medical Center, Ukraine, Kyiv*

To study influence of sexual and physical development on structural-functional state of bone tissue (BT) we've examined 97 girls aged 10–16 years old (mean age – 13,2±0,18 years; height – 1,54±0,01 m; weight – 45,6±1,3 kg). Quantitative evaluation of sexual development parameters was carried out using Tumilovych's method. The following anthropometric parameters were determined: chest volume (CV, sm), pelvic size

(D<sub>Sp</sub> – distance between anterior iliac spines, D<sub>Cr</sub> – distance between sacral crests, D<sub>Tr</sub> – distance between trochanters, sm). To evaluate structural-functional state of bone tissue (BT) ultrasound bone densitometer “Achilles+” was used (Lunar Corp., Madison, WI). Speed of ultrasound spreading (SOS, m/sec), broadband ultrasound attenuation (BUA, dB/MHz) and Stiffness Index (%) were determined. Patients were divided into three groups: I gr. – 39 girls of prepubertal age (mean age – 11,7±0,22 years; height – 1,46±0,02 m; weight – 35,6±1,4 kg); II gr. – 33 girls of prepubertal age with disorders of menstrual cycle (mean age – 14,0±0,2 years); III gr. – 25 girls with established menstrual cycle (mean age – 14,4±0,2 years). Appearance of menarche led to considerable increase in physical development parameters: (height: I gr. – 1,46±0,02 m; II gr. – 1,59±0,01 m ; III gr. – 1,59±0,01 m; weight: I gr. – 35,6±1,4 kg; II gr. – 51,4±1,8 kg; III gr. – 53,6±1,7 kg; CV: I gr. – 69,7±1,1 cm; II gr. – 81,2±1,2 cm; III gr. – 80,5±0,9 cm; D<sub>Sp</sub>: 19,8±0,3 cm; II gr. – 23,3±0,3 cm ; III gr. – 24,2±0,3 cm; D<sub>Cr</sub>: 22,4±0,3 cm; II gr. – 25,6±0,2 cm; III gr. – 26,3±0,3 cm; D<sub>Tr</sub>: 25,1±0,4 cm; II gr. – 29,0±0,3 cm; III gr. – 30,1±0,4 cm), general number of permanent teeth (I gr. – 23,6±0,7; II gr. – 27,5±0,2; III gr. – 27,1±0,3) and ultrasound characteristics of structural-functional BT state (SOS: I gr. – 1570±3 m/sec; II gr. – 1580±4 m/sec; III gr. – 1587±5 m/sec; BUA: I gr. – 98,2±1,3 dB/MHz; II gr. – 107,0±1,8 dB/MHz; III gr. – 112,1±2,5 dB/MHz; IS: I gr. – 85,3±1,1%; II gr. – 93,8±1,8%; III gr. – 99,0±2,5%). Unlike parameters of physical development, SI of girls belonging to III gr. has shown veritable increase compared to II gr. ( $p < 0,05$ ). Girls having pathological establishment of menstrual function and late menarche make up a risk group for osteoporosis. They need constant densitometrical control (once or twice a year) and respective treatment and prophylaxis (Calcium, Vitamin D metabolites, exercise therapy etc.).