INTRODUCTION: This study evaluates quantitatively the bone formation due to periosteum and/or bone marrow-endosteum in distraction osteogenesis.

MATERIALS AND METHODS: Surgical procedure. One femur of 18 NZW 2.4-3.0 kg rabbits was fitted with a custom-made external fixator.

RESULTS: X-ray evaluation: BM forms bone around the distraction gap. The P effect (P' vs. P) was significant (p < 0.01, BMC, not BMD).

DISCUSSION: Quantitatively, the P contributes more than the BM: BM deposits new bone around itself, at the fracture or healing. The spatial distribution of the bone formed is different from the combination of periosteum and bone marrow-endosteum in bone healing.

CONCLUSION: A synergistic effect (spatial and qualitative) may result from the combination of periosteum and bone marrow-endosteum in bone healing.

**Table I.** Measurements on the whole specimens (W) and in the 3 central regions (C) in the 4 groups: % increase in area, BMC and BMD, for the op. femur / non-op. femur (mean ± 1 SD).