AIM: Aiming to reduce known complications of stemmed implants, such as resorptive bone remodeling or bone damage in revision, implants with only epi-metaphyseal anchorage have been developed. In the following study the influence of three different femoral neck endoprostheses, CUT, CIGAR (ESKA Implants Lübeck) and TPP (SulzerMedica) on the postoperative load transfer to the femur was investigated in comparison to a cementless hip stem. METHODS: Using a composite femur model and photoelastic coating technique, the pre- and postoperative osseous strain was measured under static loading. The load corresponded to the absolute maximum of the hip joint load during walking. Statistical analysis was based on the interval of 99 % confidence which was generated by the preoperative measurements. RESULTS: The different anchorage concepts of the femoral neck endoprostheses exhibited a significant influence on the load transfer, especially along the medial and lateral cortical bone. But, in comparison, the cementless hip stem caused more pronounced stress-shielding which can induce resorptive bone remodelling. CONCLUSION: One specific femoral neck anchorage concept led to a change from preoperative tension to postoperative compression at the lateral cortical bone. This regionally limited effect may influence in the mid- or long-term the local bone remodeling in a negative manner.