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WEAR MECHANISMS AND SURFACE TOPOGRAPHY OF ARTIFICIAL HIP JOINT COMPONENTS AT THE SUBSEQUENT STAGES OF TRIBOLOGICAL TESTS

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Abstract: It is virtually impossible to follow through changes in surface topography and analyse wear mechanisms of the friction components of a hip joint prosthesis under *in vivo* conditions. Only under laboratory conditions can analysis of operation process of friction pairs be undertaken. Research on wear mechanisms and formation of surface topography at the subsequent stages of operation process (during *in vitro* testing) analysed in this work is a new approach to the current problem concerning investigation and analysis of the lifespan of an artificial hip joint.

The paper presents issues of artificial hip joint wear mechanisms and methods for studying changes in the surface topography of a ball-and-socket friction pair at the subsequent stages of tribological research.

The subjects of research were co-acting components of an artificial hip joint: a metallic ball and a polymeric socket. Tribological tests were performed with a hip joint simulator replicating the physiological movements and working conditions of the natural hip joint. After each stage of tribological tests, the surface texture of friction pair components was measured using a white light interference microscopy. In addition, the surface topography was examined be-

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