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JOURNAL ARTICLE

Sperm motility under conditions of weightlessness

U. Engelmann, F. Krassnigg and W. B. Schill
Department of Dermatology and Andrology, Justus Liebig University Giessen, Germany.

The aim of this study was to determine the differences in motility of frozen and thawed bull spermatozoa under conditions of weightlessness compared with ground conditions. The tests were performed within a series of scientific and technologic experiments under microgravity using sounding rockets in the Technologische Experimente unter Schwerelosigkeit (TEXUS) program launched in Kiruna, North Sweden. Using a computerized sperm motility analyzer, significant differences were found in sperm motility under microgravity compared with sperm under gravitational conditions on earth. Computer analysis showed alterations in straight line and curvilinear velocity, as well as in linearity values. The amount of progressively motile spermatozoa, including all spermatozoa with a velocity > 20 microns/second, increased significantly from 24% +/- 9.5% in the reference test to 49% +/- 7.6% in the microgravity test. In conclusion, there is strong evidence that gravity influences sperm motility.

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