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## A NOVEL SYSTEM FOR COMPUTERIZED ANALYSIS OF SPERM MOVEMENT

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**INTRODUCTION:** The computerized systems now available for the analysis of the movement of the spermatozoa do not allow for the study of the movement of the flagellum. In order to benefit the basic research and clinical diagnosis the aim of this research is to set a system which enables to evaluate the kinetic characteristics of the tail and head of the spermatozoa. **METHODS:** The workstation that we have designed and realised consists of a microscope equipped with a dark field condenser, with a normal and/or stroboscopic illumination and a high speed CCD camera which is directly connected to a computer specifically programmed to acquire and analyse serial images. The station can work automatically or in an interactive mode, according to requirements, where the motility percentage, linear and curvilinear speed and other parameters employed in the clinical analysis are automatically detected. **RESULTS:** The characteristics of the flagellum movements, the frequency and the amplitude of the waves are revealed by an interactive mode. It is possible to draw the instantaneous position of the various points individuated on the flagellum by describing its trajectory in two different systems taken as models. Through the analysis of the "time" and "frequency" domains it is possible to reveal the kinetic characteristic of various models of the spermatozoa examined under different experimental conditions. Furthermore, within the time span of the study, through the analysis of the area involved in the oscillation of the flagellum, some hypotheses can be drawn about the propulsive force exercised on the medium. Finally the system allows for the comparison between the frequencies shown by the head movements and those observed in different segments of the flagellum.