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Human sperm motion analysis by automatic (Hamilton-Thorn Motility Analyzer) and manual (Image-80) digitization systems

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Two systems allowing quantitative, objective analysis of sperm movement were compared: 1) the Hamilton-Thorn Motility Analyzer (HTM), in which sperm images are digitized automatically, and 2) the Image-80, a modified image-analysis system in which sperm movement is digitized manually by hand tracing from videotape (Tessler and Olds-Clarke, 1985). Videotapes were made of human spermatozoa obtained by a swim-up procedure. The same videotape frames were analyzed by both systems. The mean percentage of motile spermatozoa was similar as judged by eye with either the HTM or Image-80 monitors and as reported by the HTM. For every motile spermatozoon, two motility parameters were calculated: linearity (a measure of track shape) and curvilinear velocity at 30 frames/second (a measure of track speed). When samples from five donors were averaged, there were no significant differences in mean linearity between automatic and manual systems. Also, linearity as reported by the HTM and Image-80 systems for the same track was significantly correlated ($r = 0.72$; $N = 80$). Whereas the absolute values for curvilinear velocity were slightly but significantly higher for the Image-80 system than for the HTM system, their correlation was also significant ($r = 0.91$). Since the two systems provide comparable data on percentage of motile sperm as well as speed and path shape parameters, this suggests that the HTM automatic digitization is accurate for images of human spermatozoa.

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