

Speed vs Endurance: The importance of assessing sperm motility after storage

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The swine industry relies on the production of high-quality pig semen. Following quality standards, commercial doses are assessed on semen quality immediately after collection. The evaluation of motility on fresh semen is a crucial criterion for the commercialization of ejaculates. However, diluted doses are stored and used for insemination several days after collection, with the prospect that motility may change with storage. This study aimed to understand if motility traits of fresh and stored semen have different genetic backgrounds. We estimated genetic parameters for total and progressive motility traits, assessed in fresh semen and after storage for one, two, and three days, and genetic correlations between these traits. Ejaculates collected between 2009 and 2022 were evaluated using a Computer-Assisted Sperm Analysis (CASA) system. The phenotypic data included 449,966 ejaculates from 5,692 boars from a synthetic line. Pedigree data included 17,701 animals and 26 generations. Genetic parameters were estimated in a univariate analysis and genetic correlations were estimated in a bivariate analysis with a repeatability model. Heritabilities ranged between 0.20 and 0.24. Repeatability estimates were higher at collection; 0.58 and 0.63 for total and progressive motility of fresh semen, respectively, and between 0.35 and 0.41 for motility traits after storage. Genetic correlations for motility traits after storage showed high positive values between 0.79 ± 0.04 and 0.99 ± 0.01 . Genetic correlations between motility traits of fresh and stored semen ranged between 0.52 ± 0.05 and 0.76 ± 0.03 , indicating a different genetic background. This study suggests that motility traits after storage have potential significance for the development of breeding programs for semen traits.