We aimed to establish semen quality scores (SQS) in a population of proven fertile sperm donors and its correlation with successful pregnancy rates in women undergoing artificial reproductive techniques (ART) with sperm from anonymous donors due to the infertility of their male partners. A review of the medical records of 111 women who were active in the donor insemination program between 1993-2001 was done. These women underwent 724 ART cycles with sperm from 27 anonymous semen donors. The semen analysis reports from the donors were analyzed after thawing and each sample was given an SQS. Out of 111 patients, 70 had at least one pregnancy and 60 had at least one live birth, with a mean 6.52 cycles per patient. Five significant risk factors for low pregnancy and live birth rates were identified: female infertility factor, positive laparoscopy, maternal age, low number of previous births, and lack of ovulatory stimulation. After adjusting for these factors, both pre-freeze SQS (p=0.03) and post-thaw SQS (p=0.04) were found to be significantly related to IUI live birth rates. With a post-freeze SQS of 110 or higher, 19.3% of the IUI cycles resulted in pregnancy, compared with a pregnancy rate of only 10.8% per cycle for post-freeze SQS scores below 105. SQS can be used as a predictor of successful pregnancy in infertile patients undergoing donor insemination. Significantly higher rates of pregnancy and live birth can occur with the use of semen samples from anonymous donors with an SQS greater than 110. Use of such semen samples may help not only decrease the cost of ART procedures to the patient, but can also significantly improve the outcome of these procedures.