

## SELECTION OF GENETICALLY BALANCED SPERMATOZOA BASED ON THE HYPO-OSMOTIC SWELLING TEST IN CHROMOSOMAL REARRANGEMENT CARRIERS.

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### **Abstract Body**

Chromosomal translocations and other balanced rearrangements, although usually associated with a normal phenotype, can lead to the transmission of an abnormal unbalanced genome to the offspring. Balanced and unbalanced spermatozoa, being indistinguishable, cannot be selected for prior to in-vitro fertilization and preimplantation genetic diagnosis. Spermatozoa from 16 chromosomal rearrangement carriers were studied. After incubation in a hypo-osmotic solution (HOST, hypoosmotic swelling test), spermatozoa were fixed on microscope slides. The chromosomally balanced or unbalanced status corresponding to each observed class of flagellar conformation was evaluated through fluorescent in situ hybridization (FISH). We evidence here a specific type of spermatozoa, with a distinct flagellar conformation that was associated with a balanced genetic content. HOST is a simple, low cost, and time-honored procedure initially developed to distinguish immotile viable from non-viable spermatozoa. We demonstrate that it can be used as well to identify genetically balanced spermatozoa in chromosomal rearrangement carriers, with a 83% decrease in the proportion of unbalanced spermatozoa after selection. This may potentially improve reproductive prognosis in affected couples if used prior to preimplantation genetic diagnosis (PGD), and clinical utility and efficacy should be evaluated in further studies.