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**FACTORS FACILITATING THE MOVEMENT OF SPERM IN THE FEMALE REPRODUCTIVE TRACT**

- Sperm movement is activated by changes in intracellular ion concentration. After natural or artificial insemination, the sperm starts a journey from the site of deposition to the place of fertilization. However, only a small subset of the sperm deposited achieves their goal to reach and fertilize the egg.
- Factors are:
  - **Female reproductive tract environment/ PH of the medium**  
Direct measurements have shown that within 8 seconds from the introduction of semen the pH of the upper vagina is raised from 4.3 to 7.2, creating an environment favorable for sperm motility.
  - **Cervical secretions**: Under the influence of estrogen the cervix secretes highly hydrated mucus, often exceeding 96% water in women, the extent of hydration is correlated with penetrability to sperm. Cervical mucus presents a greater barrier to abnormal sperm that cannot swim properly or that present a poor hydrodynamic profile than it does to morphologically normal, vigorously motile sperm and is thus thought as one means of sperm selection. The greatest barrier to sperm penetration of cervical mucus is at its border, because here the mucus microarchitecture is more compact, Components of seminal plasma may assist sperm in penetrating the mucus border.
  - **Hormones**: Some hormones then are released through acrosome reaction which allows the Corona radiata and zona pellucida
  - **Gene expression**
  - **Cell-cell interactions**
  - Biophysical associations between sperm size and motility may influence the progression of the sperm through the female reproductive tract.
  - A critical element in sperm motility is the availability of fructose, a nutrient provided by the seminal vesicles, within the semen. Because

of their paucity of cytoplasm, spermatozoa require an external energy source. Unusually for most cells, spermatozoa have a specific requirement for fructose rather than glucose, the more commonly utilized carbohydrate energy source.

- Sperm transport into and through the uterus is said to be assisted by contractions of its thick smooth muscle walls.
- Peristaltic contractions of the smooth musculature of the tubal wall and the movement of tubal fluids directed by ciliary activity.

➤ Before a sperm can penetrate the female reproductive tract, Capacitation must occur which is the conditioning of the sperm.