ABSTRACT DELIVERED BY DR DAVID GREENING AT THE 25TH ANNUAL MEETING OF

ESHRE (EUROPEAN SOCIETY OF HUMAN REPRODUCTION & EMBRYOLOGY)
AMSTERDAM 28TH JUNE – 1ST JULY 2009

# Keep the river flowing. An exploratory study to assess the effect of daily ejaculation for 7 days on semen parameters and sperm DNA damage.

## Introduction

The optimal ejaculatory frequency for human fertility is yet to be determined. This study assessed semen quality after daily ejaculation for 7 days as compared to a standard day 3 abstinence period. We hypothesised that frequent ejaculation (FE) may be a physiological mechanism to improve sperm DNA damage while enabling standard, WHO-defined, semen parameters to stay within the normal, and presumed fertile, range.

## Materials and methods

118 men with a history of infertility, recurrent miscarriage or repeated IVF failure were enrolled based on evidence of elevated sperm DNA damage as determined by the sperm chromatin structural assay (SCSA). This assesses sperm DNA integrity based on the percentage of sperm with a high susceptibility to low pH-induced DNA denaturation and is expressed as the DNA Fragmentation Index (DFI%). The entry criterion was a DFI>15%. After 3 days of abstinence: semen parameters were assessed by strict WHO criteria.

Men were then instructed to ejaculate daily for 7 days with re-assessment on day 7. No other treatments or lifestyle change interventions were offered. All 118 men completed the 7 days of ejaculation.

## Results

| | After 3 days' abstinence | After 7 daily ejaculations | Confidence interval of difference | Significance (paired t-test) |
|---|---|---|---|---|
| Count (million) | 183.8 | 70.9 | 84.4 – 142.1 | P < 0.0001 |
| Concentration (mil/ml) | 61.7 | 43.6 | 11.4 – 25.4 | P < 0.0001 |
| Volume (ml) | 3.5 | 2.0 | 1.3 – 1.8 | P < 0.0001 |
| Rapidly progressive motility | 27.2% | 31.8% | -7.6 – 1.7 | P < 0.005 |
| Slowly progressive motility | 14.5% | 14.5% | -1.6 – 1.8 | n.s. |

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|---|---|---|---|---|
| Total motile (incl. non-progr) | 49.0% | 54.1% | 2.2 – 7.8 | P < 0.001 |
| Non-motile | 7.3% | 7.7% | -1.5 – 0.6 | n.s. |
| Normal morphology (strict) | 2.2% | 2.5% | -0.6 – 0.2 | n.s. |
| DFI | 33.9% | 25.8% | 5.9 – 10.4 | P < 0.0001 |

Ninety-six (96) men (81.4%) exhibited a decrease in DFI (mean decrease 12.1%), whereas 22 men (18.6%) had an increase in DFI (mean increase 9.6%). Frequent ejaculation significantly decreased semen volume and sperm density, without compromising sperm motility, which rose slightly but significantly. While there was no change in morphology on very strict WHO criteria, the changes in DFI were substantial in degree and statistically highly significant.

**Conclusions**

There is no evidence-based consensus about ejaculatory frequency in advising couples attempting to conceive. What is known is that intercourse on the day of ovulation offers the highest fecundity rate. But what is the best advice leading up to ovulation or to egg retrieval for IVF?

Previous studies have shown that increased periods of abstinence are associated with sperm DNA damage. We have previously shown that increased ejaculatory frequency can reduce sperm DNA damage, we believe by reduced exposure to reactive oxygen species in the testicular ducts and epididymis through forcing a faster transit time. This could account for the improvement in DNA seen in 80% of the men. The remainder who had an increase in DFI might have a different explanation for their sperm DNA damage not amenable to the present remedy, perhaps a process leading to apoptosis or a to a defect in protamination. We observe that ejaculation frequency also has no obviously beneficial effect on the proportion of immotile sperm.

This present study involved ejaculating daily for 7 days. The optimal number of days of ejaculation might be more or less than 7 days but a week appears manageable and favourable. It seems safe to conclude that couples with relatively normal semen parameters should have sex daily for ***up to*** a week before the ovulation date. In the context of assisted reproduction this simple treatment may assist in improving sperm quality and ultimately achieving a pregnancy.