

The evolution of a rape-avoidance mechanism: Fertile women show increased strength with risk of rape

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Background

Research suggests women may have evolved a mechanism to prevent rape at peak fertility due to the high costs to reproductive fitness.

Fertile compared to nonfertile females...

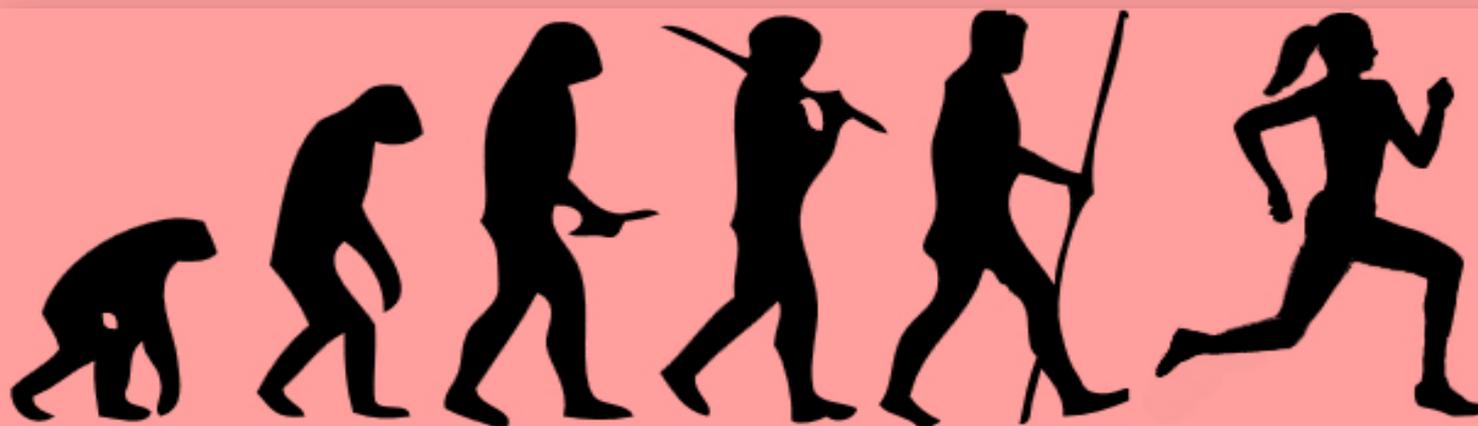
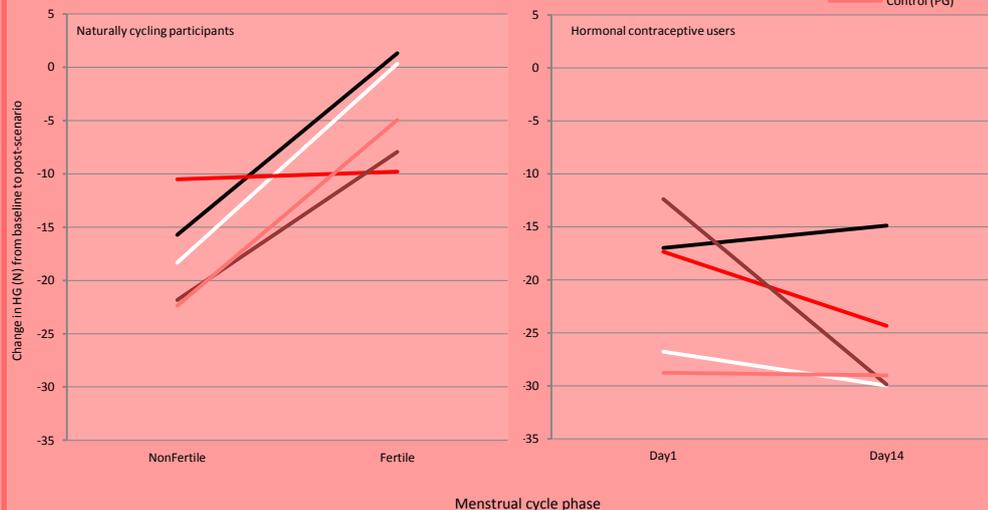
- avoid alleyways and underground garages
- keep their distance from a 'shady-looking' male
- demonstrate increased handgrip strength in response to a scenario suggestive of sexual assault

However, it is unclear whether this apparent mechanism works to prevent rape, and thus unwanted pregnancy specifically, or whether females become more danger avoidant and protective in general during this phase.

A rape-specific response needs to be demonstrated to show the evolution of a rape-avoidance adaptation.

Results

Change in HG from baseline to post-scenario



Method

30 females participated twice; during a fertile and nonfertile phase (days 1 and 14 for hormonal contraceptive users)

Participants listened to 5 scenarios with varying risk of rape, including male- and female- perpetrated physical assaults, explicit sexual assault, and a control.

Handgrip strength (HG) was tested at baseline and immediately after each scenario



Ovulatory status was verified using hormone-based ovulation tests

Results

There were no main effects or interactions regarding type of scenario or cycle-day for hormonal contraceptive users where hormones remain stable, and participants are not fertile.

For naturally cycling participants, where hormone levels and fertility status fluctuates, there was an interaction between fertility status and scenario-type.

Fertile women showed increased strength relative to baseline for all scenarios mentioning a male, and thus with increased risk of sexual assault. This was also true for the control scenario that saw "the silhouette of a tall man emerge" before reaching for a football.

There was no difference in reactivity to the female-perpetrated physical assault scenario between fertile and nonfertile trials.

Conclusions

HG increased with increasing risk of sexual assault, but only when conception was possible.

The only scenario with equal reactivity between fertile and nonfertile trials was for the female-perpetrated physical assault, where risk and costs of sexual assault on reproductive fitness are controlled.

Results therefore suggest females may have evolved an adaptation to avoid rape at peak fertility. Thus, results may suggest domain specificity in this evolved adaptive behaviour.

This research shows how natural selection shapes mechanisms to solve adaptive problems, here being the real-world challenge of rape to reproductive fitness.