

Paleo fitness and sexual fitness

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Published as:

Miller, G. F. (2016). Sexual fitness. *Paleo Fitness* online magazine.

What is 'fitness', really?

In modern culture, being 'physically fit' basically means your body is stronger, faster, and healthier than average. Athletes are fit; couch potatoes aren't.

But in evolutionary biology, 'fitness' has a broader and deeper meaning. An animal with high fitness is one that tends to survive, reproduce, and raise offspring successfully, given all the challenges of its physical, social, and sexual environment. Genes for higher fitness spread through a species over the generations; genes for lower fitness gradually go extinct. That's the essence of Darwinian evolution. It seems simple enough.

Yet this concept of evolutionary fitness is tricky in several ways.

First, it's not just about 'survival of the fittest'. Evolutionarily, survival is useless without reproduction. You might be the most formidable alpha-male gorilla in the Congo, but if you have no interest in mating with females, your genes that prioritize fighting over copulating will die out with you.

True, most baby animals die of starvation, disease, or predation long before they reach sexual maturity. But even among animals that reach sexual maturity, many don't attract a mate. Involuntary celibacy is common in nature, especially among males (since females are generally choosier.) Successful sexual reproduction is a very high standard, and most animals don't make the cut. Even in the best 'fitness centers', the most dedicated gym rats often can't find a date if they're butterfaces or bores.

Second, evolutionary fitness is always relative to your environment – your physical habitat, your biological niche, and your social context. The environment presents challenges ('adaptive problems'), and in response, complex traits ('adaptations') evolve to deal with those challenges. Adaptations fit into adaptive problems like keys fit into locks. They release the animals' full genetic potential to live and breed.

But there's no such thing as a super-organism that could survive and reproduce in every possible environment. There are always trade-offs – strength versus speed, growth rate versus body size, attracting new mates versus caring for offspring. This is why biologists talk about 'fitness' (relative to an environment) rather than 'perfection' (in every possible environment).

The fact that fitness is about matching a particular kind of environment is the crucial insight behind 'mismatch theory', the foundation of the whole Paleo lifestyle. There's a mismatch between ancestral and modern environments, so our adaptations often don't work right, and our physical and mental health is undermined. Humans are adapted to prehistoric lives as hunter-gatherers in small clans – walking long distances, sprinting after game, carrying heavy loads, eating nutrient-dense foods, socializing around campfires, and sleeping under starlight. Not

sitting sedentary in front of daytime computers and nighttime TVs, eating the Standard American Diet, and socializing through Facebook.

The Paleo movement has been good at understanding and reducing mismatch in the domains of nutrition, exercise, and sleep. But, so far, it's often neglected a central domain of mismatch: the contrast between ancestral mating and modern dating.

This leads to a crucial point: evolutionary fitness is always relative to the tastes of the opposite sex and the tactics of your sexual rivals. (In this essay, I'll focus on heterosexual mating, because it's the only kind that shaped human evolution by passing along genes in prehistory.) In sexually-reproducing species like ours, where both sexes try to attract good mates and to choose good mates, there's a competitive mating market. Most animals will 'swipe left' on most potential mates in the great Tinder app of sexual evolution. But your chances of getting picked as a mate are a lot higher if your sexual rivals are less attractive than you. No animals are perfectly attractive in every way, but some are generally attractive to most of the opposite sex, and some are sexually disgusting to most of the opposite sex. Sexual fitness is about being adapted to the mate preferences of the opposite sex, not just being able to run after prey and carry back the meat.

So how do animals attract mates? Darwin made a compelling case back in 1871 that animals attract mates by displaying 'sexual ornaments' like peacock tails or female human breasts, or doing 'courtship displays' like bird song or human story-telling. But he didn't really understand why the opposite sex would pay attention to ornaments and displays. In the last few decades though, biologists have figured out that many of these ornaments and displays are actually 'fitness indicators' – they're reliable signals of an animal's underlying good genes, good health, and good intelligence.

The best fitness indicators are hard to fake, because lower-fitness animals simply can't produce the ornament or display in an impressive form. A peacock that's sickly, starving, and parasite-ridden can't grow or maintain an impressive tail. A person with brain damage, major depression, and low verbal fluency just can't tell a compelling story on a first date. These kinds of costly, hard-to-fake fitness indicators testify to an animal's objective fitness as a mate, so mate preferences evolve to pay a lot of attention to these fitness indicators.

Many of our fitness indicators are physical – they're bodily ornaments analogous to the peacock's tail. These include female breasts and buttocks, and male height, upper body muscles, and beards. In both sexes, physical fitness-indicators also include facial symmetry and typicality, hair and skin condition, and general energy level. When single people worry about 'looking hot', they're usually trying to improve these physical fitness-indicators – which can usually be accomplished by improving their physical fitness.

The problem is, we're often confused about how sexual fitness (attractiveness) relates to physical fitness (athleticism.) Our impression of what the other sex wants can be biased by modern media, so there are some mismatches between what each sex thinks the other sex wants, and what the other sex actually wants.

For example, runway supermodels, and Hollywood actresses on the red carpet at the Oscars, strive for a body mass index so low that they're unlikely to be ovulating – but they give other women the impression that they're high status and worth imitating. This media cult of thinness leads to women's body image problems, female anorexia, chronic cardio, and binge diets. In fact, most men want women a bit heavier, with enough fat to be fertile, but not so much that

they're unhealthy. The super-skinny female media stars also tend to be weak, with low lean body mass, giving women the mistaken impression that men prefer mates who aren't strong and capable. The popularity of female CrossFit athletes like Camille Leblanc-Bazinet and MMA fighters like Gina Carano is starting to correct that error.

There's also confusion between what would be attractive to the opposite sex, versus intimidating to same-sex rivals. For example, young men in prehistory did a lot of fighting, so they evolved to assess other men's formidability – could I kill him, or could he kill me? They also tried to become more formidable by imitating what strong men and fierce warriors do. This is why male teens love superhero movies – nobody messes with the Hulk. The trouble is, most women don't find the Hulk very attractive as a boyfriend: he's inarticulate, angry, unemployed, and green. Most women prefer men who are more slender than bulked up. They prefer men with enough fat that they could survive famine and disease, rather than being totally ripped and dehydrated. Women want a mate who's as much a lover as a fighter.

Because of this drive for formidability, modern men tend to work too hard at building excessive muscle and cutting every bit of fat – resulting in bodies that look intimidating to other guys, but that aren't actually ideal from a woman's point of view. Asked what body types are most attractive, many women say Olympic swimmer, decathlete, or Crossfit enthusiast, rather than a Hulk-like bodybuilder, strongman, or MMA heavyweight. (On the other hand, neither sex finds long-distance runners very attractive – their upper bodies and butts are too weak, and their fertility is too compromised.)

Another kind of mismatch concerns the breadth of physical skills that people cultivate. Prehistoric humans did a wide range of physical activities that could show off their health and athleticism to potential mates – hunting, gathering, fighting, driving away predators, recovering from diseases and injuries, building shelters, knapping flint, climbing trees, dancing for hours, playing with kids. But most modern humans develop very few physical skills beyond high school gym class, and even most good athletes over-specialize in just a few sports. With the rise of CrossFit and MMA, there's more skill-breadth than a couple of decades ago, but nowhere near the skill-breadth of the typical hunter-gatherer. The result is that most people don't have the range of natural skills that the other sex would prefer (especially dancing).

Sex itself can be a physical fitness indicator. Compared to sex in other primate species, human copulation requires an unusual amount of blood flow to the genitals and a high sustained power output, and lasts a very long time. Other primates have a bone in the penis (the baculum) that helps with erections, whereas human males have lost the penis bone, and rely entirely on blood flow to get hard. As a result, poor erectile function is a sensitive early marker for cardiovascular disease, whereas good erectile function predicts lower risks of heart attacks, strokes, and diabetes, is associated with lower oxidative stress and inflammation, and reveals aerobic capacity and general health. Thus, women can use erectile function as an unconscious proxy for many aspects of male health.

Conversely, female orgasm typically requires a high degree of genital vasocongestion (blood engorging the labia, vagina, and deep structures of the clitoris), and this vasocongestion is probably undermined by the same health problems that create erectile dysfunction. Thus, men can use female orgasmic response, unconsciously, as an indicator of female cardiovascular health.

Also, in men with worse cardiovascular health, copulation moderately increases the risk of 'coital angina', myocardial infarction, and sudden death from ventricular arrhythmia. Thus,

women can use prolonged, vigorous copulation as a (rather high-risk) health test. Finally, 'great sex' often involves relatively high power output in terms of watts, sustained over a number of minutes, often with periods of sprint-like intensity alternating with breath-catching slower periods. It's like a Tabata workout, and it could reveal peak performance ability in a similar way.

One takeaway here is that physical fitness, sexual attractiveness, and mating success have deeply intertwined evolutionary roots, grounded in the logic of sexual ornaments, courtship displays, and fitness indicators.

Most of this is quite intuitive when you think about it, but it's rarely articulated in mainstream medicine, nutrition, sports, or the fitness industry. It's not even commonly understood in the Paleo lifestyle movement, which often adopts a 'survival of the fittest' mind-set rather than a 'reproduction of the sexiest' mind-set. Moreover, there are some media-fueled mismatches between prehistoric mating and modern dating that lead each sex to misunderstand what the other sex really wants. These misconceptions can drive us to follow exercise and nutrition patterns that might make us a lot fitter and more attractive than the average modern person – but not as attractive as we could be. It also leads us to over-invest in a few narrow sports rather than cultivating a diverse suite of physical competencies, from combat sports to natural movement to erotic dance to sex itself.

I think the Paleo movement needs a more explicitly sexual perspective on what we're doing and why. We all know that we eat clean, lift heavy, and sprint hard partly to attract and retain good mates. But we're not yet comfortable with saying that. We treat increased sexual attractiveness as a benign side-effect of Paleo rather than a core motivation for Paleo. We rationalize the lifestyle by focusing on evolutionarily-narrow survival benefits (I'll live longer, I'll avoid diseases X and Y) or evolutionarily irrelevant self-actualization benefits (I'll realize my potential, I'll become a better person).

I hope in the future that we can boldly embrace physical fitness as a legitimate part of sexual fitness, and a core part of our mating life. After all, in an evolutionary perspective, health is never an end in its own right; it's just a means towards reproduction.