Why We’re Motivated to Exercise. Or Not.

If you give a rat a running wheel and it decides not to use it, are genes to blame? And if so, what does that tell us about why many people skip exercise?

To examine those questions, scientists at the University of Missouri in Columbia recently interbred rats to create two very distinct groups of animals, one of which loves to run. Those in the other group turn up their collective little noses at exercise, slouching idly in their cages instead.

Then the scientists closely scrutinized and compared the animals’ bodies, brains and DNA.

For some time, exercise scientists have suspected that the motivation to exercise — or not — must have a genetic component. When researchers have compared physical activity patterns among family members, and particularly among twins, they have found that close relations tend to work out similarly, exercising about as much or as little as their parents or siblings do, even if they grew up in different environments.

These findings suggest that the desire to be active or indolent is, to some extent, inherited.

But to what extent someone’s motivation to exercise is affected by genes — and what specific genes may be involved — has been hard to determine. There are only so many human twins around for study purposes, after all. And even more daunting, it’s difficult to separate the role of upbringing from that of genetics in determining whether and why some people want to exercise and others don’t.

So the University of Missouri researchers decided to create their own innately avid runners or couch potatoes, provide them with similar upbringings, and see what happened next.

They began with ordinary adult male and female lab rats. These rats generally embrace the opportunity to run, although individual mileage can differ substantially among rats.

The scientists put running wheels in the animals’ cages and, for six days, tracked how much they ran. Afterward, the males and females that had logged the most miles were bred to each other, while those who’d run the least were likewise paired. Then the pups from each group were bred in a similar way, through 10 generations.

At that point, the running rats tended to spontaneously exercise 10 times as much as the physically lazier animals.
Now, the researchers set out to determine why.

In very broad terms, two elements are especially likely to influence whether we, as individuals, habitually exercise or not. One is physique. Animals or people that are overweight or ill, or who have poor muscle quality or tone or other physiological impediments to activity, tend to be sedentary. If moving is difficult, you don’t do it.

So, the researchers now compared their two sets of animals’ bodies. You might expect that after 10 generations of running frequently or running almost not at all, the animals’ builds would be substantially different. But they weren’t. The non-runners were slightly heavier, but the two groups’ average body compositions, or percentage of muscle versus fat, were very similar. Both groups also had similarly healthy muscles and good appetites.

Differences in physique were not driving differences in exercise behavior.

So the researchers began to examine the other primary determinant of exercise behavior: psychology. How closely rats’ emotions echo our own, if at all, is hard to know. But the runners in this experiment did seem to enjoy running, while rats in the other group appeared to want to avoid it.

And it was here that genetics entered. The scientists compared the activity of thousands of genes in a specific portion of the brain that controls reward behavior, or the motivation to do things because they’re enjoyable.

They found dozens of genes that differed between the two groups.

The rats’ decision to run or not to run, in other words, was being driven, at least in part, by the genetics of motivation.

What this study means for those of us with two legs and many excuses for not making it to the gym is not yet clear. “It does seem likely that there is a genetic element to the motivation to exercise,” in people as well as in rats, says Frank Booth, a professor of physiology at the University of Missouri who oversaw the study.

But whether the same genes are involved in people as in lab rats isn’t known, although part of the rationale for developing these strains of rats is to isolate genes that can be tested for in people.

At some point, Dr. Booth says, scientists conceivably could develop a test that would reliably inform someone whether he or she is genetically predisposed to being physically lazy, or the reverse.

But genetic profiles will never be destiny, Dr. Booth adds. His study’s findings “are not meant to be an excuse not to exercise.” Behavior, he says, remains a mix of innate tendencies and personal choice. So, even if it is in your nature to enjoy long hours on the couch, you can choose to get up and move.
UM curators finalize faculty voting change

Tuesday, April 16, 2013 at 2:00 pm

After approval from the University of Missouri Board of Curators on Friday, non-tenure-track faculty officially have voting rights on campus issues at MU.

The Board of Curators approved the measure on a 7-0 vote while meeting in Rolla last week. Curator David Steward was not present for the vote.

The measure had been approved via a faculty vote that ended the week before but needed the curators' final stamp. The non-tenure-track faculty members will have full voting rights on university issues with the exception of issues related specifically to tenure.

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Posted in Education on Tuesday, April 16, 2013 2:00 pm.
University of Missouri looks to lift limits on naming rights

The University of Missouri is trying to make it easier to honor donors who want their names on campus buildings in exchange for large contributions.

A university rule first adopted in 1969 says donors can have just one campus building named on their behalf. The rule applies to the four system campuses in Columbia, Kansas City, Rolla and St. Louis.

The university's Board of Curators now wants to eliminate that restriction. Governing board members say the rule is antiquated and may discourage multiple gifts by deep-pocketed benefactors.
Enforcement staff responds to motions to dismiss Miami case

Letter defends work of investigators.

By Steve Walentik

Tuesday, April 16, 2013 at 2:00 pm

The NCAA enforcement staff didn’t sit in silence as several of its members faced accusations of unethical and impermissible conduct — allegations that became public with a University of Miami motion to have its case before the NCAA's Committee on Infractions dismissed.

It responded with its own harsh criticism, claiming that Miami is "grasping at straws" in an attempt to disqualify members of the enforcement team. It also stated it is "offended" by Miami's insinuations regarding the NCAA's handling of the case, which began nearly two years ago with disgraced booster Nevin Shapiro's allegations of rampant rules violations at the school.

The enforcement made those comments in its own 42-page document, sent from Jonathan Duncan, the Interim Vice President of Enforcement, to Britton Banowsky, the chairman of the Committee on Infractions. CBSSports.com obtained a copy of the document, which asks Banowsky to throw out Miami's motion for dismissal and similar requests made by former Miami and current Missouri basketball Coach Frank Haith, former Haith assistants Jake Morton and Jorge Fernandez, and former football assistant Aubrey Hill.

"In the enforcement staff's view, the motions to dismiss are largely based on assumptions, false accusations, misleading statements and meritless claims about the enforcement staff and its investigation. For the reasons set forth below, the enforcement staff requests that the Committee on Infractions deny the motions," Duncan wrote.

The rebuttal document, dated April 5, attempts to address the accusations leveled against the enforcement staff.

Attorney Wally Bley cited the NCAA's request for confidentiality earlier this month when declining to release a copy of the motion filed on behalf of Haith, but the rebuttal document seems to reveal some of the areas where he and his lawyers are attacking the NCAA's handling of the case.
It states that motions by Miami and Haith argued that "the enforcement staff pre-judged Shapiro's truthfulness before obtaining any corroborating evidence and they point to a letter written Ameen Najjar, then director of enforcement, to a judge in support of Shapiro's credibility."

It states that Haith, in his motion, accused the enforcement staff of leaking information to the media by calling a January report by CBSSports.com's Jeff Goodman about the pending charges against Haith "an almost verbatim recital" of information the enforcement staff had given him and his attorneys a week earlier.

It also states that Haith also alleges the enforcement misrepresented the purpose for a Sept. 5, 2012 interview even though investigator Abigail Grantstein repeatedly told him it would contain "no surprises" and "new issues."

But the rebuttal document also attempts to refute each of those claims.

For the first, it cites more than 100 interviews it said it conducted and more than 1,000 pages of documents it said it reviewed in an attempt to verify Shapiro's claims.

For the second, it says the claim "lacks merit" because Goodman's report proved to be inaccurate, and not just because it said Haith would be charged with unethical conduct for his alleged role in violations. The NCAA's notice of allegations does not charge Haith with unethical conduct by the lesser charges of failure to promote an atmosphere of compliance and failure to monitor the activities of his staff.

For the third charge, it says the enforcement staff "does not believe there is any legislated or other duty imposed on the enforcement staff to specifically identify what topics will be covered during an interview." It also states that neither Haith nor his attorneys raised concerns about the question during the Sept. 5 interview or in another interview on Sept. 25.

One charge made by Haith that the enforcement staff didn't dispute was that Grantstein and Bryanna Barnhart did "misspeak in the questioning of Haith and Morton," but it disputed the assertion that happened with unethical intent.

The rebuttal document covers more than just Haith's allegations. Duncan also defends the enforcement staff on numerous other issues.

He concludes the document by writing:

"The enforcement staff would first defer to the judgment of the Committee on Infractions regarding whether it has the authority to act to dismiss a case prior to a hearing. If the Committee on Infractions determines that it has such authority, the enforcement staff believes that the only legitimate argument raised for such action relates to the potential violation of confidentiality involving the public release of Cadwalader report. Nevertheless, even if the Committee on Infractions believes that a violation occurred in that regard, the enforcement staff is uncertain as to any demonstration of harm that would merit dismissal of the case."