

The Aerobic Newspaper



Photos by Joey McLeister (c) The Story Laboratory 2009

KIDS who produce *The Aerobic Newspaper* (left) stay active and creatively connected ~ with ideas, community and each other.

MOVING in an era of *passive* consumption, these kids buck the trend.

COLLABORATE to kinetically create.

Aerobic News reporters, pictured above, walked to the Minnesota History Center to research time capsules.

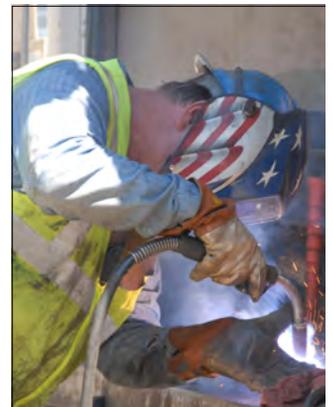
Why An Aerobic Newspaper?

Welcome to *The Aerobic Newspaper*~a novel, project-based kinetic curriculum for kids who like to move, create, connect, collaborate and communicate.

The Aerobic Newspaper is a new genre of curriculum. It was conceived and developed by the award-winning science communication, curriculum development and E-learning company, [The Story Laboratory](#), based in St. Paul, Minn. *The Aerobic Newspaper* is designed to improve and deepen elementary-school aged kids' reading, writing, analytical and planning abilities--and their health. It does this by combining physical activity with story telling in words and pictures, and by mastering the rapidly evolving communication and technology skills that underlie and drive the collaborative writing, teaching and learning model of the future.



The 4th-6th graders filled a time capsule with their reports about summer '09.



Do. Move. Learn.

In producing *The Aerobic Newspaper*, kids master cognitive tasks by doing and moving. The high level critical thinking tasks involved include multiple modes of writing; reading comprehension; conducting discerning research to identify and synthesize quality source material; reflecting to organize materials as narrative and exposition. Students develop engaging newspaper content using the additional skills of dynamic interviewing techniques, project management, digital story telling and illustration. They distribute it and interact with larger communities by mastering the online production technology needed to publish a Web newspaper, circulate their ideas, and interact with readers through various social media networks and technologies.

Create. Don't Just Consume.

The Aerobic Newspaper is the outgrowth of two concepts. The first is a theory of metabolism called Non-Exercise Activity Thermogenesis--[NEAT](#), for short. In 2005, Mayo Clinic scientists found that slow, steady movement is key to maintaining a healthy body weight and healthy blood vessels. By requiring kids to move as they research, reflect and write, the NEAT newspaper teaches kids healthy work habits for what is traditionally sedentary school and office work--thus setting the stage for lifelong cardiovascular health.

The second concept embodied in *The Aerobic Newspaper* is that kids are incredibly capable and creative producers of Web content. They are not just passive consumers of programs directed at them. As digital natives, young children have agency in the interactive world. They can originate intelligent and engaging digital stories and tell them fluently. They don't need adults to write, film or record them for them.

They just need guidance, some grounding, motivation and the right technology to tell and distribute their stories; they need *The Aerobic Newspaper*.



They convinced a welder to make a steel container.



Construction foreman Gary digs the hole.



Students buried the time capsule just before, below, the roller sealed the street.





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The Aerobic Newspaper

MEET NEAT: Science

The Scientist

James Levine, M.D.,
Mayo Clinic Investigator who
conducted the NEAT study

Scientific Expertise

Dr. Levine is an
endocrinologist. This
specialized field studies the
hormonal influences on the
body's activity

Favorite Activity

Fencing

Advice

Have fun, get up and move!

MEET NEAT: Findings

Spuds vs NEATniks

Dr. Levine's scientific research
studies show that some
people naturally move more
than others. They are
NEATniks. They tap their toes;
fidget and wiggle; are the first
to leap up at a restaurant to
find extra napkins, refill water



NEAT stands for **N**on-Exercise **A**ctivity **T**hermogenesis.

Left, Dr. Levine moves on a stair stepper during a telephone consult. Right, a woman reads while working on a treadmill desk.

*"You can expend calories in one of two ways:
One is to go to the gym and the other is through
all the activities of daily living called NEAT. Over
time, it appears NEAT is far more important for
calorie burning than exercise in nearly everyone."*

James Levine, M.D., Mayo Clinic

THE SECRET is in the underwear.

glasses, ask for the check, plug the parking meter. They choose dancing or bowling for an evening out over a movie. But they don't go to the gym or train for triathalons. After dinner, NEATniks go for a walk or get out and garden while spuds dive for the couch.

The 1,000 Calorie Difference

Dr. Levin's studies show that the extra activity NEATniks naturally engage in through the way they perform daily living tasks causes them to spend as much as 1,000 calories a day more than their spudly counterparts. Spuds like to have NEATniks around just to get the remote and walk it over to them.

Microtechnology-enhanced briefs and sport bras help scientists understand the mysteries of metabolism at Mayo Clinic.

Here's how their research study worked: 20 volunteers in Mayo Clinic's Non-Exercise Activity Thermogenesis (NEAT) Lab wore custom-made, data-logging underwear 24 hours a day that was fitted with microtechnology electronic sensors to detect all forms of movement.

THE UNDERWEAR, such as the set the woman in the top right illustration is wearing, was provided by Mayo. (The men's tops look like undershirts). Each day, the underwear was exchanged for a fresh set when the volunteers arrived at the Mayo lab for breakfast. After they turned in the worn underwear, technicians downloaded all the movement data from the microtechnology sensors embedded in it.

For six months, daily movement data were downloaded this way from the underwear sensors into a computer to track all movements the volunteers performed. Approximately 150 million lines of data that were downloaded from the data-loggers, analyzed and coordinated with interviews and activity journals. The conclusion: NEAT, more than rigorous, formal exercise programs, explains leanness in people--and lack of NEAT explains weight gain.



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Vol. 307, no. 5709, pp. 584 – 586
DOI: 10.1126/science.1106561 [< Prev](#) | [Table of Contents](#) | [Next >](#)

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REPORTS

Interindividual Variation in Posture Allocation: Possible Role in Human Obesity

James A. Levine,* Lorraine M. Lanningham-Foster, Shelly K. McCrady, Alisa C. Krizan, Leslie R. Olson Paul H. Kane, Michael D. Jensen, Matthew M. Clark

Obesity occurs when energy intake exceeds energy expenditure. Humans expend energy through purposeful exercise and through changes in posture and movement that are associated with the routines of daily life [called nonexercise activity thermogenesis (NEAT)]. To examine NEAT's role in obesity, we recruited 10 lean and 10 mildly obese sedentary volunteers and measured their body postures and movements every half-second for 10 days. Obese individuals were seated, on average, 2 hours longer

What makes lean people lean? That's the question motivating much of James Levine's work on obesity at the Mayo Clinic, reported in the Jan. 28, 2005 issue of [Science](#).

The insight into lean from the study by James Levine, MD--which was the most controlled, detailed, high-tech and data-dense scientific research of its kind ever performed--may surprise you.

NEAT by the NUMBERS

2 Hours

Heavier people sit more--on average, they sit 2 hours a day. Lean people are NEATer. They move more, engaging a metabolism scientists call NEAT. NEAT stands for Non-Exercise Activity Thermogenesis, and refers to activities and movements that are natural parts of daily living--as opposed to structured exercise classes or sports.

Active performance of daily living tasks--vigorous housecleaning, yardwork, walking to the coffee shop-- is to many a mundane category of activity. But to Dr. Levine and his team, teaching and encouraging NEAT behavior may be a more productive approach to reversing the alarming rise and spread of obesity than expecting those who dislike exercise to go to the gym regularly.

Says Dr. Levine: "The neat thing about NEAT is that it's really really simple, yet powerful in terms of potential to impact overall health. At last we have the data to show this."

20,000 Volunteers

The initial NEAT study involved 20 volunteers who ate every morsel and meal at Mayo Clinic kitchens--20,000 meals in total--every day for 6 months so all the inbound calories were carefully tracked. Outbound calories--those expended--were tracked through sophisticated microtechnology, including motion sensing technology found in jet fighter control panels. The motion sensors were embedded in the custom-made underwear volunteers agreed to wear 24 hours a day (a fresh set was issued each day) for six months. Only water sports were prohibited. Volunteers were otherwise told to go about their normal routines.

\$1,000 Glass of Water

An estimated 150 Mayo scientists were involved in NEAT studies, from Dr. James Levine's team of endocrinologists, to dieticians, to

analysts using a mass spectrometer to help evaluate study results, to metabolism monitors who administered glasses of water spiked with tracers --at \$1,000 per glass--to assure participants were eating only Mayo-prepared food.

1 NEAT Revolution

The initial results were published January 28, 2005 in the prestigious journal *Science*--and surprised many people: They show that for controlling weight, it is metabolically more effective to adopt an active style of performing daily living tasks rather than to set time aside to engage in formal exercise programs.

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