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Rutland, VT,

## Osteoporosis Rising in Young Females

By JUDY FOREMAN  
The Boston Globe

If you're a teenage girl, you may not want to hear what happened to Jill Nye — but she sure wants to tell you.

In her freshman year of high school, Nye became a running star. She ran the 5,000 meters, the 10,000, cross-country, every race she could find, racking up great times.

At the University of Miami in Ohio, she showed up for the track team and was soon beating so many teammates on full scholarships that the school decided to give her one, too.

Every day, she would eat as little as she could — she was always hungry — to pass the weigh-in with the coach but still have enough energy to run eight to 15 miles.

She was so lean — at 5 feet 8, she weighed only 115 — that her periods stopped coming, which worried her. But whenever a doctor gave her a hormone treatment (a drug called Provera), her period would begin again, so she put it out of her mind.

Then came the stress fractures in her leg bones — 13 in all.

Then, two years ago, she broke her wrists hiking in Maine and doctors — finally — ordered X-rays. The diagnosis was a shock.

Though she was only 27, Nye had

lost more than 30 percent of her bone mass from osteoporosis, the bone-thinning disease most women get only after menopause.

"Menopause," in fact, is as good a way as any to describe what happens to women like Nye who, through too much exercise, too little food — or both — wind up so thin that their periods cease, a condition called hypothalamic amenorrhea.

Exercise per se is not bad, nor is having a nice figure. In fact, weight-bearing exercise is a way to avoid osteoporosis, because bone tissue responds to gravity by making more bone.

What is dangerous, doctors say, is to exercise or starve yourself to the point where you get so thin — 85 percent of ideal body weight — that you no longer have periods.

In real menopause, which occurs around age 50, periods stop because the ovaries no longer make estrogen. In amenorrhea, periods stop for a different reason, says Dr. Beverly M. K. Biller, an endocrinologist at Massachusetts General Hospital in Boston.

"When you run or starve yourself to excess," she says, "the entire reproductive system shuts off from the top down," an adaptation that probably evolved so that animals would reproduce only when food was plentiful.

In a woman with normal menstrual cycles, the hypothalamus, a control center deep in the brain, secretes a hormone called GnRH, or gonadotropin-releasing hormone, which travels down special blood vessels to the pituitary gland, just under the brain.

Triggered by the GnRH, the pituitary secretes LH (luteinizing hormone) and FSH (follicle stimulating hormone), which trigger the cyclic release of estrogen and eggs from the ovaries.

But if you get too thin — or suffer severe stress, such as starting college away from home — the hypothalamus may stop producing GnRH, causing periods to stop, says Biller.

And if periods stop for long enough — six months or more — the result can be osteoporosis, even in teenagers. They can actually have osteoporosis more severely than older women.

No one knows how many girls get osteoporosis by exercising too much, though researchers know that 40 percent of elite female athletes have only three periods a year, a clear risk.

Studies of anorexia suggest that 2.2 percent of young women diet to the point of amenorrhea, according to a 1994 report by Dr. Anne Klibanski, chief of MGH's neuroendocrine unit.

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