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Weight Gain and the TSH: Prevention Writer's Good Deed

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In the [August 2008 issue of Prevention magazine](#), writer Julian Kesner^[1] brought an important issue to Prevention readers' attention. The issue is one of extreme concern to many hypothyroid patients—that is, weight gain despite “in-range” TSH levels.

In addressing this issue, Julian Kesner cited an important study. The study vindicates countless hypothyroid patients who have failed to convince their clinicians that their weight gain was not from lack of exercise or fattening food intake. Literally hundreds of patients have told me they complained to their clinicians about accumulating fat after going on T4 replacement—the thyroid hormone therapy that keeps the TSH in range. Invariably, the patients have expressed frustration at their clinicians' cavalier assurance: “Your TSH is in range, so your thyroid is fine; you just need to exercise more and cut back on calories.”

That many patients have found these assurances frustrating is understandable. Some of the patients, for example, were actively teaching aerobics classes several times each week, and they subsisted on a virtual caveman diet.

An example I'll never forget was an intelligent 35-year-old man who was very physically active because he trained management executives. He was concerned about the 50 lbs, mostly belly fat, that he had gained within two years after starting T4 replacement with Synthroid. He was highly motivated to lose the belly fat, as he felt it might affect his credibility with the executives he trained. As part of the executives' training, he included presentations on the exercise of will power and tempered restraint in dealing with employees. “Every time I do a presentation on will power and restraint,” he said, “I'm distracted by the thought that the executives in the audience are questioning whether I can restrain myself from eating too much.”

After he had begun to gain weight, this man—who already worked out four days each week at a gym—increased his visits to six days each week. He worked out with weights for an hour, and for another hour, he cross-trained at high intensity on several aerobic exercise machines. Unfortunately, none of this helped him lose the extra weight. The solution for him was to switch to natural desiccated thyroid, taking enough to suppress his TSH level. Within three months, he lost all his excess weight. At one year follow-up, his abdomen was flat, his family physician told me the man was apparently healthy in every respect, and in a phone conversation, the man told me that his extraordinarily healthy condition was entirely consistent with the will power and restraint he taught executives.

In the study that Julian Kesner cited, Fox et al.^[2] included 2,407 Americans. The

study subjects' TSH levels were all in-range. The researchers found that at baseline, the average body weight of women with TSH levels in the lowest quarter of the range was 142.2 lbs (64.5 kg); the average weight of women in the highest quarter of the range was 154.8 lbs (70.2 kg). The average weight of men whose TSH levels were in the lowest quarter of the range was 182.5 lbs (82.8 kg), and men in the highest quarter of the range weighed on average 188.7 lbs (85.6 kg). That is, the higher the TSH levels, the heavier the people were.

Fox et al. noted that with increased TSH levels, women gained more weight than men did, although both sexes gained. The researchers conjectured that women may accumulate more fat because fat oxidation is faster in men. At follow-up 3.5 years later, increases of the TSH level within the reference range "was strongly and linearly associated with weight gain."

The concluding statements of Fox et al. are worth repeating: "In conclusion, thyroid function (as assessed by serum TSH concentrations) within the reference range is associated with body weight in both sexes. Our findings raise the possibility that modest increases in serum TSH concentrations within the reference (physiologic) range may be associated with weight gain."

Other researchers have also reported that TSH levels—even in-range levels—were associated with obesity. A study of 4,082 Danish people with reference range TSH levels showed a positive correlation between the TSH levels and body mass index. [3] The researchers concluded, "Even slightly elevated serum TSH levels are associated with an increase in the occurrence of obesity." (Italics mine.)

Turkish researchers studied 226 obese or overweight female patients with in-range TSH and thyroid hormone levels.[4] The researchers found that obese females had higher TSH levels than lean females. The investigators also found a statistically significant positive correlation between TSH levels and body weight, waist size, and fasting insulin levels. They concluded, "This study strongly supports existing, but contradictory, evidence that TSH levels are positively correlated with the degree of obesity and some of its metabolic consequences in overweight people with normal thyroid function." (Italics mine.)

The three studies I mention above were published in 2005,[3] 2007,[4] and 2008. [2] They were published in the long-gone wake of a 2000 report from the journal *Thyroid*. [5] In that study, which has largely been ignored by the endocrinology specialty, researchers compared the treatment of hypothyroid patients to that of thyroid cancer patients. They found that hypothyroid patients on T4 replacement doses (dosages of thyroxine that keep the TSH within range) gained weight. In contrast, thyroid cancer patients didn't take replacement doses of T4; instead, they took doses of T4 high enough to suppress their TSH levels. And they didn't gain weight. The researchers concluded that T4 replacement was in fact the cause of the hypothyroid patients' weight gain: "The excessive weight gain in patients becoming hypothyroid after destructive therapy for Graves' disease suggests that restoration of serum TSH to the reference range by T4 alone may constitute inadequate hormone replacement."

In his *Prevention* magazine article, Julian Kesner made a few technical errors, ones likely to be made by anyone new to clinical thyroidology. Those few errors, however, are far outweighed by the high merit of his journalistic deed—heralding in the popular press a research finding that can bring solace to people who have gained weight they cannot lose despite having in-range TSH levels. Hopefully the news will also enlighten some of the clinicians who mistakenly assure patients that an in-range TSH level means it is impossible that weight gain is related to too little regulation by thyroid hormone. If clinicians will heed the research findings and correct this common mistake in clinical care, they will better serve those patients whose weight gain is associated with TSH levels that have risen within the reference range.

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