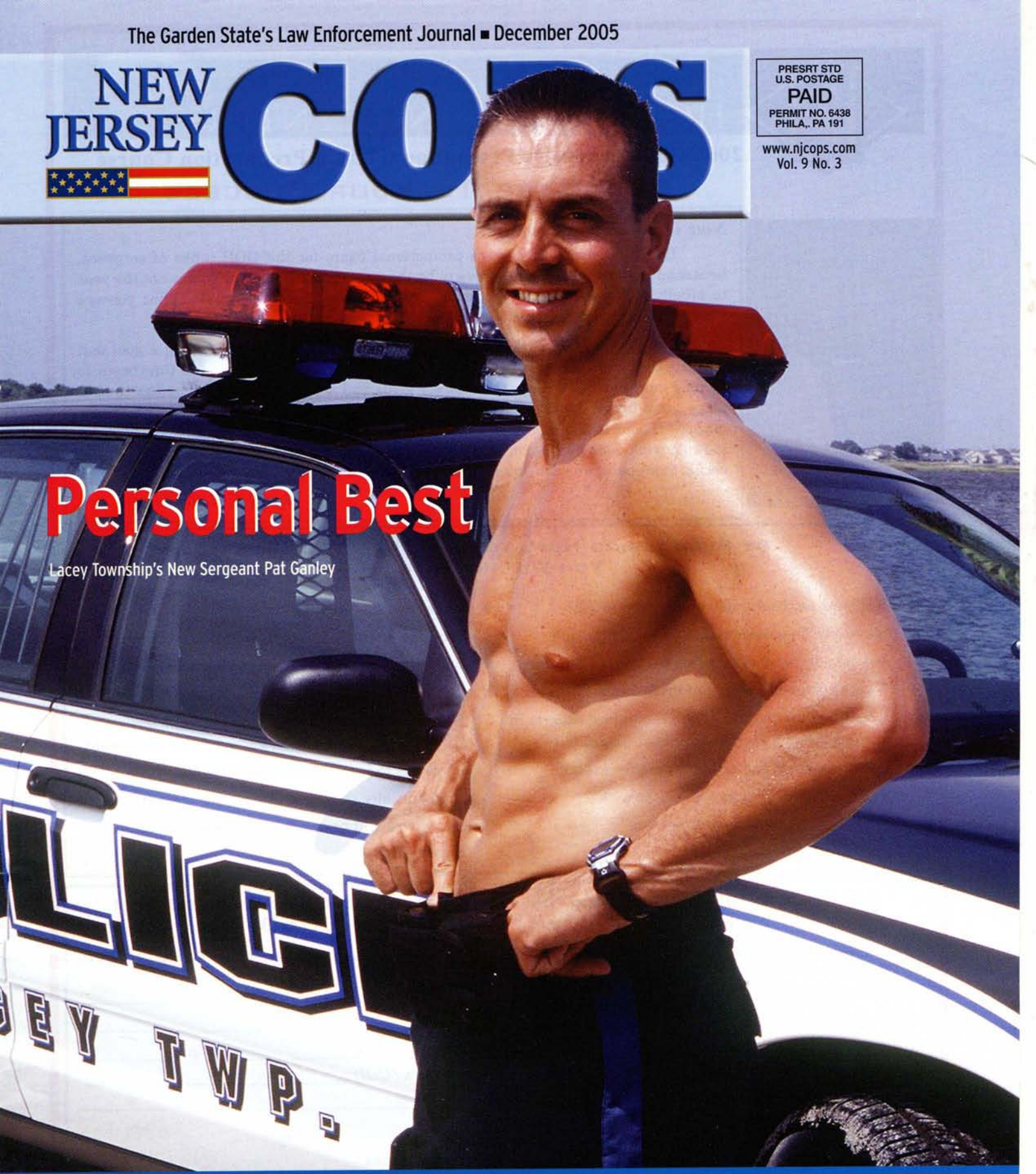
The Garden State's Law Enforcement Journal ■ December 2005

NEW JERSEY COPS

PRESRT STD
U.S. POSTAGE
PAID
PERMIT NO. 6438
PHILA,. PA 191

www.njcops.com
Vol. 9 No. 3



Personal Best

Lacey Township's New Sergeant Pat Ganley

Annual Blue Mass celebrated in Newark. PAGE 6

Popular supplements: What the research says

BY MATT BRZYCKI

An ever-growing number of supplements have been purported to increase muscular size and strength as well as performance. There's no escaping the lure of these and other products. Eat this pill and you'll be more powerful than a locomotive. Use this powder and you'll be faster than a speeding bullet. Drink this potion and you'll be able to leap tall buildings in a single bound.

Matt Brzycki

Yes, health-food hucksters suggest that their pills, powders and potions will turn you into a veritable superman or superwoman. But what does science say about these substances? Let's take a look at some of the more popular products in terms of safety and efficacy.

BORON

Because of gross exaggerations by the supplement industry, individuals have used boron thinking that it will increase their muscular size and strength. One study that has been cited frequently by the supplement industry showed that boron increased testosterone levels as much as 300 percent. But what the promoters didn't mention was that the subjects in this study were postmenopausal women whose testosterone levels were quite low. In fact, the women hadn't received adequate boron intake for the previous 119 days prior to the supplementation. In a seven-week study that involved 19 male bodybuilders (aged 20-27), the researchers concluded that boron supplements had little effect on total testosterone, lean-body mass and muscular strength.

CHROMIUM

Most of the claims regarding the benefits of chromium are based upon two poorly controlled, unpublished studies. These two studies were referenced in a review article that was written by a chemist who was consulting for a supplement company. In 1996, the Federal Trade Commission ordered the company and (two others) to stop making unsubstantiated claims that chromium decreases body fat and increases muscle mass. Nevertheless, misconceptions about chromium still persist.

Chromium is a micromineral that functions in the metabolism of carbohydrates and fat and helps to maintain blood-glucose levels. However, numerous studies have shown that the short-term use of chromium doesn't decrease body fat or promote fat loss in any way. In a 16-week study that involved 95 healthy Navy personnel, a group that received chromium didn't significantly reduce body fat more than a group that received a placebo.

To date, only one study has reported that chromium increases muscle mass. But in that study, muscle mass was estimated from anthropometric measurements which can be unreliable.

It appears as if chromium doesn't increase muscular strength, either. In a 12-week study, a group that received a placebo actually increased their strength more than a group that received chromium. Interestingly, the researchers in this study also found that the subjects who received chromium had urinary chromium losses that were nine times greater than the subjects who were given the placebo.

CREATINE

Creatine continues to receive a great deal of attention in the athletic, scientific and medical communities. It is, perhaps, the most studied supplement.

There are many anecdotal reports that creatine is effective but scientific research paints a different picture. Much of the research that has investigated creatine has been conducted in a laboratory. In this controlled setting, the best evidence for performance enhancement from the use of creatine is in repeated maximal, short-term sprints on a stationary bicycle. And even then, some studies have shown no improvements. Of the research that has been done outside a laboratory, very few studies have shown that creatine improves performance in realistic activities such as swimming and running. For example, two studies using a total of 52 elite male and female swimmers found that creatine didn't improve performance in a 100-meter swim; a study using 18 well-trained male runners showed that creatine produced significantly slower times in a 6,000-meter run.

There haven't been any adverse side effects reported in studies using 20 - 30 grams of creatine per day for up to seven days. Nor have there been any adverse side effects reported in studies using smaller dosages of 2 - 3 grams of creatine per day for longer periods up to seven weeks. But here's an important point: Most studies don't include any formal way of assessing the adverse side effects. The fact of the matter is that the long-term effects of creatine supplementation are unknown. There's also a fear that many individuals typically exceed the recommended dosage, undoubtedly putting them at a greater risk for incurring adverse side effects. Of greatest concern is the potential for water retention, muscle cramping, dehydration/heat-related illness, muscle strains/dysfunction, gastrointestinal distress (such as an upset stomach, gastrointestinal pain, nausea and vomiting) and liver and kidney dysfunction.

DEHYDROEPIANDROSTERONE

Dehydroepiandrosterone (DHEA) is a precursor to steroids and, therefore, is believed to increase the production of testosterone. This hasn't been proven by research, however. In one study, subjects who received a 50-milligram dose of DHEA didn't increase their levels of testosterone. In another study, subjects who received 150 milligrams of DHEA per day didn't improve their body composition or muscular strength.

Since DHEA is a precursor to steroids, it's no surprise that it has the potential for similar adverse effects. There are reports of hair loss, growth of facial hair and voice deepening in women as well the appearance of female-like breasts in men (which is not reversible). DHEA may also increase the risk off uterine and prostate cancer. Understand that this or any other steroid precursor could cause someone to fail a test for steroids.

DHEA is available over-the-counter; it's not subject to government regulation. Therefore, there's the potential for inaccurate dosage and impurities. Independent testing of 16 DHEA products found that only eight (50 percent) contained the exact amount of DHEA that was stated on the labels and the actual levels var-

SEE PAGE 23

FROM PAGE 22

ied as much as 150 percent. Amazingly, three (18.75 percent) of the 16 products didn't contain any DHEA whatsoever.

HYDROXY METHYLBUTYRATE

A relative newcomer to the supplement ranks is hydroxyl methylbutyrate – which, thankfully, goes by the letters HMB. It's a metabolite of leucine (a branched-chain amino acid).

HMB has been promoted as a supplement to increase strength and lean-body mass, supposedly by preventing the breakdown of muscle tissue. This, however, has no scientific proof. One study did support the theory that HMB may prevent muscle damage. But the study didn't examine whether or not HMB increased strength or lean-body mass. In a study that did look at this aspect, subjects who received HMB increased their upper-body strength more than subjects who received a placebo but the same wasn't true for their lower-body strength. Also of note is that a supplement company sponsored this study.

Research on HMB has found minimal performance enhancement in untrained individuals and almost none in trained individuals. In a study that involved 26 collegiate football players, HMB didn't produce any performance benefits. It appears as if HMB is safe when taken for eight weeks or less.

NITRIC OXIDE

Recently, nitric oxide has been promoted by the supplement industry as a performance-enhancing substance. As strange as it seems, nitric oxide was best known as an air pollutant (formed when nitrogen burns such as in automobile emissions). Needless to say, it came as quite a shock when the biological functions of nitric oxide were discovered in the 1980s. In fact, Science magazine named it "Molecule of the Year" in 1992. And three pharmacologists from the United States were awarded the 1998 Nobel Prize in Physiology or Medicine for discovering the role of nitric oxide as a "signaling molecule in the cardiovascular system."

In the body, nitric oxide has numerous functions. For one thing, it signals the body to dilate blood vessels thereby increasing blood flow. (Apparently, nitroglycerin acts by releasing nitric oxide gas which widens the coronary artery.) In addition, nitric oxide is an important neurotransmitter that relays messages between nerve cells.

Be that as it may, this doesn't mean that there's any benefit to taking nitric oxide as a supplement. At the present time, no scientific research has shown that nitric oxide supplements will improve physical performance or any of the aforementioned biological functions.

THE BOTTOM LINE

In looking at the scientific research, these are just more supplements in a long line of products that offer more hype than hope. As they say, "caveat emptor" – let the buyer beware!

Matt Brzycki is the coordinator of Recreational Fitness and Wellness at Princeton University. A former Marine Drill Instructor, he has authored, co-authored or edited 14 books on strength and fitness, including SWAT Fitness (available at www.operationaltactics.org).