

Metal: Panacea or Placebo?

Many Tout Curative Properties of Titanium, Copper, Silver and Gold, but the Science Isn't There

From ancient Egypt to the Internet age, the medicinal properties of metals have been touted for millennia.

Wearing copper is said to reduce arthritis pain and inflammation. Magnets supposedly increase circulation, relieving stiffness and pain. Gold and silver theoretically enhance cognitive function and the body's ability to repair itself.

By Melinda Beck

Titanium, though unknown in ancient times, is said to help stabilize the body's flow of energy—so much so that many Major League Baseball players have been draping themselves with titanium-coated necklaces in official team colors.

"It helps us recover and we're proud to be associated with it," said Yankee pitcher Joba Chamberlain, a paid endorser of Phiten's titanium-coated

sportswear, after winning the American League pennant Sunday night.

But such claims have always been one part medicine to one million parts marketing. A British study of copper and magnetic bracelets in the journal *Complementary Therapies in Medicine* this month confirms what skeptics have long believed: Any perceived benefit is psychological at best and no better than a placebo.

Researchers from the University of York and Hull University in Yorkshire had 45 osteoarthritis sufferers over age 50 wear four types of bracelets (copper, a weak magnet, a stronger magnet and a demagnetized strip) for four weeks each. Each subject eventually wore all four bracelets, so they served as their own controls, with the order determined randomly. The upshot: The subjects experienced no meaningful difference in pain relief, physical function, mobility or need for medication while

wearing any of the bracelets.

"I was hoping these things would work," says lead researcher Stewart Richmond, noting that such inexpensive remedies could cut health-care costs. "But the results suggest there is nothing but a placebo effect."

Certified athletic trainers say the placebo effect can be very powerful, which is why they seldom dissuade pro athletes who want to try the latest fad.

"Confidence is a huge part of the formula," says Ralph Reiff, director of St. Vincent Sports Medicine Performance Center, Indianapolis. "If a product is safe and not unethical and it buoys a player's confidence, it might give him an edge. I have no issue with it."

Even Mr. Chamberlain conceded, during the champagne spray, "It doesn't matter what it is you are wearing; if you believe in it, it works."

In short, most of these medical accessories work as well as a player's

lucky game-day socks.

So why does the public keep buying them, spending some \$4 billion a year on copper and magnetic jewelry alone?

One reason is that ailments like arthritis often remain stubbornly resistant to mainstream medicines, so sufferers will try almost anything. Some 19% of rheumatoid-arthritis sufferers have tried copper bracelets, according to one survey. Another reason is that they're cheap, don't require a prescription and can make a user feel like he or she is in league with a celebrity endorser. And hope springs eternal when it comes to health care.

Magnets: As far back as 200 B.C., Chinese healers believed that naturally magnetized rocks called lodestones could correct unhealthy imbalances in the body. European physicians in the Middle Ages had a wide variety of uses for magnets; in retrospect, some appli-

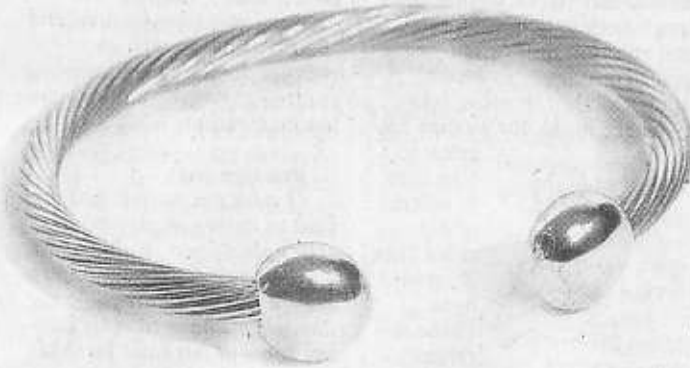
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 cations (retrieving arrowheads embedded in flesh, for instance) made more sense than others (combating baldness). Queen Elizabeth I's doctors used magnets to treat her arthritis, and the belief that magnets can alleviate pain persists today, despite scant scientific evidence.

Theories abound as to why magnets might ease pain. An 1882 ad for magnet-studded corsets claimed the arrangements of the magnets created "minute batteries that recharged the blood... the effect being exhilarating to the wearer."

Another theory is that magnets exert a pull on the iron-containing hemoglobin in blood. But if that were true, "when you were in an MRI, you'd explode," says Mr. Richmond, a Ph.D. student at University of York who is now conducting another study on magnets for treatment of rheumatoid arthritis.

Magnets are marketed in a variety of forms—from bracelets and necklaces to magnet-studded insoles, muscle wraps and mattress pads. But after crackdowns by the Food and Drug Administration and Federal Trade Commission, marketers no longer directly claim that their products have much effect. AceMagnet-



A judge shot down initial health claims for the Q-Ray ionized bracelet (above). Regulators warn consumers away from colloidal silver (below).

ics.com, says on its Web site: "Magnets are widely marketed to treat or ease the symptoms of various diseases and conditions, including pain." It also notes that "Scientific research so far does not firmly support a conclusion that magnets of any type can relieve pain."

In one case brought by the FTC, a federal district court in Chicago ordered the makers of the Q-Ray Ionized Bracelet to refund up to \$87 million to consumers for making claims the court dismissed as "blather." Judge Frank Easterbrook wrote: "Defendants might as well have said, 'Beneficent creatures from the 17th Dimension use this bracelet as a beacon to locate people who need pain relief, and whisk them off to their home world every night to provide help in ways unknown to our science.'" Under new owners and making fewer claims, Q-Ray bracelets are still being sold online, for \$59 to \$199.

Still, the National Center for Complementary and Alternative Medicine (NCCAM), a government agency studying unconventional approaches to health care, is investigating the use of magnets for fibromyalgia pain, migraines and Parkinson's disease.

In the meantime, experts say magnets pose little harm—although pregnant women and people who wear pacemakers, implanted defibrillators, insulin pumps and medication patches should avoid them.

Copper: A trace mineral found in minute quantities in the body, copper plays a role in the

cardiovascular, nervous and skeletal systems and in the body's ability to repair tissue. One theory is that too little copper can cause arthritis and other joint problems, and that absorbing it through the skin can restore a normal balance.

Scientific evidence is scant. Mr. Richmond says copper deficiency is probably a symptom and a consequence of arthritis and inflammation, not a cause.

As with magnets, marketers of copper jewelry are careful about their health claims, even while blasting each other's products as inferior. AACopper.com notes that "a greenish color may appear on your wrist while wearing our pure copper bracelets. ... For those individuals wearing copper for arthritis, this is exactly what they want to see."

The popularity of copper bracelets has faded since the 1980s, when some pro golfers sported them. Despite some Internet claims, Arnold Palmer hasn't worn a copper bracelet in years, according to Donald "Doc" Giffin, his longtime friend and assistant. Even in their heyday, copper bracelets provided more of a psychological edge than a physical one. "You'd be walking through the clubhouse and they're handing them out and you figure, 'What the heck, I'll try one,'" says Monte Hessler, a chiropractor on the PGA tour. "I wore one for a while. Didn't notice anything different."

If you suspect you have a copper deficiency, it's best to see a doctor before using ingestible copper supplements. But wearing

copper is generally seen as harmless.

Titanium: It's been used for years in artificial joints because of its light weight and durability, but the current popularity of titanium-coated nylon necklaces among pro athletes is a little harder to explain.

It began when Phiten, a Japanese company founded by a chiropractor in the 1980s, developed a way to dissolve nanoparticles of titanium in water and then infuse it into products including shirts, socks, stickers, athletic tape, necklaces and massage lotion. In such forms, the titanium works "with your body's energy system, helping regulate and balance the flow of energy," Phiten claims. "Proper energy balance helps to alleviate discomfort, speed recovery and counteract fatigue. Athletes find that they tire less easily and recover faster from intense physical activity."

Asked for scientific evidence, Phiten sent a study conducted at Japan's Kyoto Prefectural University and published this year in the journal *Life Sciences* showing that mice in cages with titanium-infused rubber sheets slept better than mice with placebo sheets. It concluded that titanium "has a relaxant effect."

U.S. baseball players reportedly noticed players in Japan wearing the titanium necklaces and brought the fad home. Phiten says at least 300 major-league players have worn its products, and its gallery of paid endorsers includes Josh Beckett of the Boston Red Sox and tennis star Lleyton Hewitt. U.S. Olympic marathoner Kara Goucher says she started wearing a Phiten necklace after seeing rival Paula Radcliffe wearing one in 2007. "My racing and my training and my recovery have been much more consistent since I started wearing it," she says. "I can't prove it's from the necklace, but at this point, there's no way I wouldn't wear it."

Phiten's statements haven't been evaluated by the FDA. Nor has the NCCAM specifically studied titanium.

Silver: Before the dawn of antibiotics, silver was used on



Shira Kozlov/Free Wall Street Journal (2)

the skin as an antimicrobial agent and disinfectant and internally to treat epilepsy, gonorrhea and tropical sprue. Compounds like silver nitrate are still used to treat conjunctivitis in newborn babies, and silver sulfadiazine is sometimes used to treat burns.

But colloidal silver—tiny particles suspended in liquid and sold as dietary supplements—has regulators worried. Some Web sites claim colloidal silver sprays, lotions, injections or pills can prevent colds and flu and treat diabetes, cancer, chronic fatigue, herpes, shingles, prostatitis and HIV/AIDS.

The NCCAM says such claims are unfounded. The FDA in 1999 issued a ruling that no products containing colloidal silver are recognized as safe or effective.

Indeed, ingesting excess silver can cause stomach distress, seizures, kidney damage and can turn skin a bluish-gray tint, a condition called argyria that is irreversible.

Gold: The ancient Egyptians thought that ingesting powdered gold would bring them immortality. Since the 18th century, doc-

tors have used injections of gold salts to treat autoimmune disorders like lupus and rheumatoid arthritis. But side effects were severe and as new rheumatoid arthritis treatments have been developed, gold salts have fallen out of favor in recent years.

Some marketers are peddling colloidal gold in tablet or liquid form as dietary supplements with vague promises of cognitive restoration. One marketer, Optimax, says its Aurasol tablets are "for use as a source of colloidal gold without medical or health claims." Still, its Web site does mention a pilot study in which five subjects each took 30 mg of colloidal gold every day for a month and improved their mean I.Q. score by 20%.

Phiten, which markets bottled "G Water" that contains colloidal gold, says it has in-house research showing that spraying it on the head suppresses "cerebral fatigue of the brain."

Perhaps if consumers became smarter, they would be more skeptical of such claims.

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