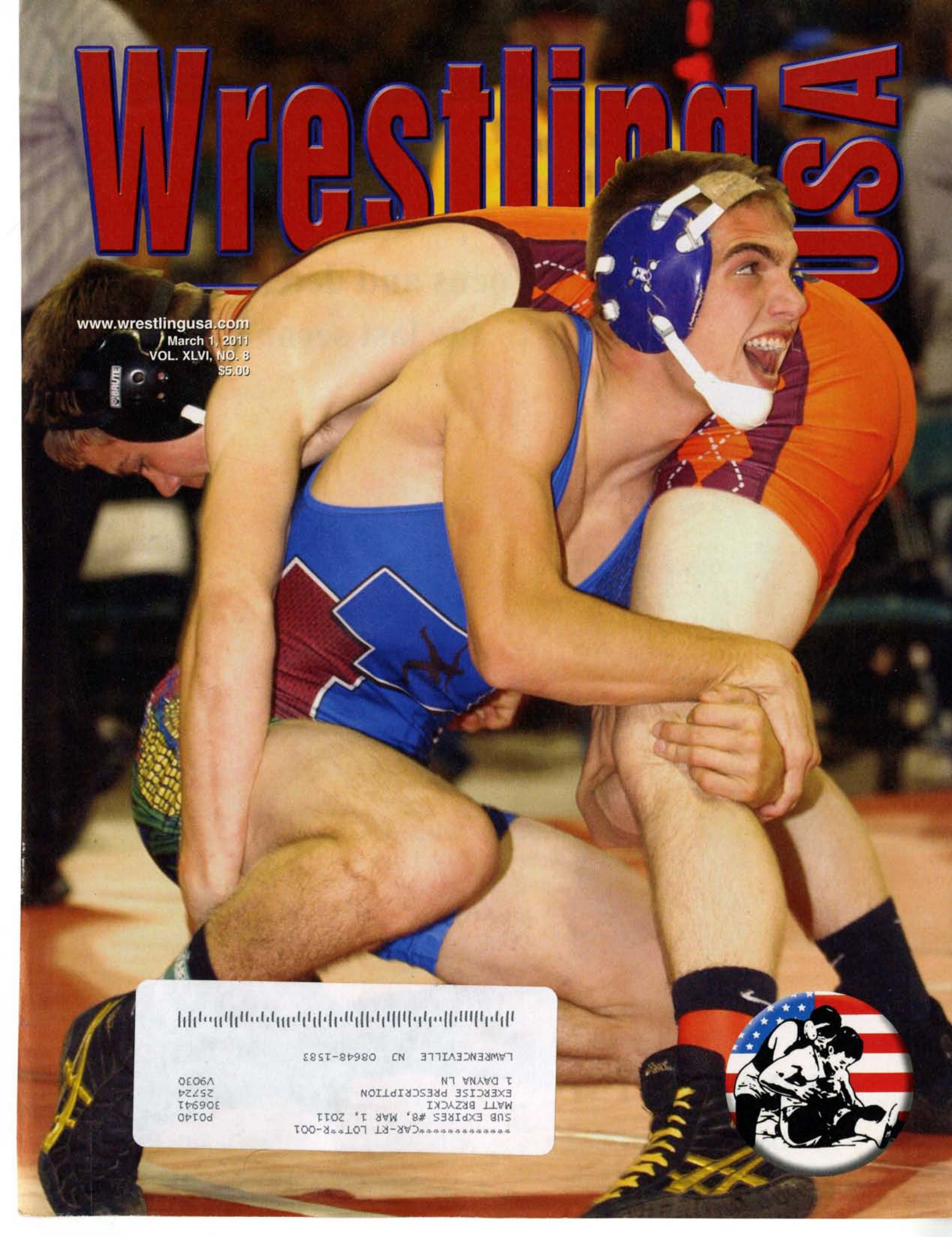
Wrestling USA

www.wrestlingusa.com
March 1, 2011
VOL. XLVI, NO. 8
$5.00



COACHES MUST EVALUATE STUDIES ON SUPPLEMENTS

By Matt Brzycki

California - 135 lbs. Trey Saulter (Healdsburg) taking down Ishi Silva (Windsor) in a match-up of Sonoma County League rivals. Saulter won this match by fall as Healdsburg went on to win the dual meet 32-30. Photo by John Sachs, Tech-Fall.com

Athletes are always looking for ways to get bigger, faster and stronger. They also want to increase their muscle mass and decrease their body fat. In pursuing these physical enhancements, many wrestlers often consider taking nutritional supplements and some may seek your advice.

The marketing tactics that are employed by supplement manufacturers can be quite alluring. One popular way is to cite studies. For instance, an advertisement might say "in a university study, subjects increased their muscular strength by 20%" or "more than 50 studies have proven the effectiveness of the key ingredients."

The mere mention of studies makes it sound as if there's credible evidence that a supplement is effective. But the studies may be poorly designed, irrelevant or taken out of context. And that's why it's important for you to obtain and read the studies that are referenced. But once you get your hands on a study, how do you evaluate it?

QUESTIONS TO ASK

Here are seven questions that should be asked to determine if a study on a supplement has any merit:

Was the study published in a scientific journal?

Some of the studies that are mentioned in advertisements for supplements haven't been published anywhere; others appear in non-scholarly publications. In either case, it means that the study didn't go through a rigorous peer-review process in which experts in a related field (aka "referees") do an impartial review of the manuscript to determine whether or not it should be published.

With very few exceptions, magazines that are found in bookstores and on newsstands are non-scholarly publications. Any claims about the effectiveness of supplements in these types of publications are largely based on anecdotal evidence, meaning that the support is rooted entirely in personal experience not scientific research.

This isn't much better than the guy in the weight room who says that after he took a certain supplement, his arms increased by 1.5 inches, his time in the 40 decreased by 0.2 seconds and his bench press improved by 50 pounds. Basically, his "success story" is anecdotal evidence. The individual may have gotten bigger, faster and stronger but there's no proof that the changes were caused by the supplement.

While on the subject, coaches should be wary about information that's available on the Internet where advertisements for supplements abound. Although the emergence of the Internet has given us access to an unbelievable amount of information that's literally at our fingertips, not all of it is credible. Remember, any crackpot with a keyboard can post information on the Internet.

Was the study designed properly?

Because a study is published in a peer-reviewed journal doesn't guarantee that it's well designed. The "gold standard" for researching the effectiveness of a supplement is a randomized, double-blind, placebo-controlled study. What does this mean?

In a randomized study, subjects are randomly assigned to groups – rather than selected or chosen for a certain group – in such a way that the physical/physiological profile and size of each group are roughly the same. In a double-blind study, the researchers who are distributing the treatments and the subjects who are receiving the treatments are unaware – or "blinded" – as to who is getting what. And in a placebo-controlled study, one group of subjects receives a supplement and another group – a "control" group – receives a placebo.

Note: A placebo is a substance that contains no active ingredients; it's usually a sugar tablet and should be similar in appearance, taste and smell to the supplement being studied so that the subjects can't distinguish between the supplement and placebo.

Also keep in mind that studies of short duration or with too few subjects aren't scientifically meaningful. Additionally, the results should be corroborated in other studies by other researchers at other laboratories.

Who were the participants/subjects in the study?

In evaluating studies, it's important to consider the population that was examined. Obviously, for a study to be relevant, the subjects in the study must be somewhat similar to your athletes.

Here's an example: Fucoxanthin, a compound that's found in brown seaweed, has been promoted as a supplement for losing weight/fat. In a study that's often used to support this belief, subjects who were fed brown seaweed had a 5 to 10% reduction in weight. However, the subjects in the study were rats and mice. (By the way, this particular study wasn't published.)

Responses that are experienced by animals cannot always be generalized to humans. A classic example of this is resveratrol, a chemical found in red grapes and wine that has been touted as a fat-burning supplement. One study that involved mice found positive benefits from resveratrol. But in order to get the same relative amount of resveratrol as the mice did in the study, two scientists estimated that a human would have to consume about 333 glasses of red wine each day.

Even if a study does involve humans, they may be a different population than your athletes. Boron is a supplement that's promoted for increasing muscular size and strength. A study that was frequently cited by supplement manufacturers showed that boron increased testosterone by up to 300%. What the advertisements didn't mention was that the subjects in the study were postmenopausal women, aged 48 to 82. Of course, this population is considerably different than your wrestlers.

Did the study find significant improvements?

A term that's frequently used in studies is "significant" (or "significantly"); it's used to describe the amount of change made by a group as well as the difference between two or more groups. When the amount of change made by a group is said to be "significant," it means that it's "probably true" that the amount of change was the result of the treatment rather than pure chance; when the difference between two or more groups is said to be "significant," it means that it's "probably true" that the difference was the result of the treatment rather than pure chance.

Consider, for example, a study in which one group receives a supplement and another group receives a placebo. Both the supplement and placebo could produce a significant increase in some variable – such as muscular size or strength – without there being a significant difference between the two treatments. So the group that received the supplement might experience a greater amount of improvement than the group that received the placebo but the difference might not be large enough to conclude that the supplement is superior to the placebo. Rather, the difference may be due to "pure chance."

Was there a selective reporting of results from the study?

There's an old saying that if you torture the data long enough, you can make it confess to anything. This is often true when it comes to the marketing of supplements.

Advertisements for one supplement note that a study found an increase in lean-body mass and maximum bench press. However, these results were selected from a handful of other findings. In the study, the researchers randomly assigned 36 men (aged 18 to 31) to three groups: One group received whey protein, another group received whey protein plus creatine monohydrate and the third group received a placebo (maltodextrin). All groups used the same strength-training program. After six weeks, those who received whey protein plus creatine had significantly greater increases than the other groups in lean-body mass, bench press strength and knee extension peak torque. But there were no significant differences between the groups in squat strength and knee flexion torque.

2010 Harold Nichols/Cyclone Open Championships - 149 lbs. Essai Dominguez with a low leg attack on Justin DeAngelis as they both come to the mat. Dominguez decisioned DeAngelis 5-2. Photo by Johnnie Johnson.

Did the study find any adverse effects?

A study might show that a supplement lives up to the hype but it's important to note whether or not there are unwanted side effects. Sodium citrate is a supplement that's promoted for improving endurance. In a study, nine elite athletes (average age 27.8) ran 3,000 meters on two separate occasions: One after receiving sodium citrate and another after receiving sodium (table salt). The athletes ran the 3,000 meters significantly faster (by an average of about 10 seconds) after consuming sodium citrate than after consuming sodium. However, when using sodium citrate, eight of nine athletes experienced gastrointestinal distress.

Even if a study didn't find any adverse effects, the duration might have been too short; long-term studies are needed to assess safety. Remember, athletes might use a certain supplement for months or years not days or weeks.

Also take into account that some studies don't investigate adverse effects. In other cases, adverse effects aren't reported.

Finally, athletes often take more than one supplement. The fact is that adverse effects can be produced by combining one supplement with another.

Was the study funded and, if so, by whom?

Many scientific journals require researchers to disclose all sources of their funding and professional relationships with any company or organization that may benefit from favorable outcomes. And for good reason.

Studies on supplements are often funded or "sponsored" by manufacturers of those same supplements. When a manufacturer pays to have its own product investigated, it increases the possibility that the study could be biased in

some way. Needless to say, studies that are funded by companies that have a direct financial interest in the results should be viewed with suspicion.

There's strong evidence that the results of a study tend to favor the funder. An analysis of 206 studies found that studies with industry funding were about four to eight times more likely "to be favorable to the financial interests of the sponsoring company" than studies without industry funding. That's nothing: Another analysis of 398 studies found that researchers who had a conflict of interest were 10 to 20 times more likely to present positive findings than those without a conflict of interest.

Therefore, you should determine if one or more researchers have any financial ties to the sponsor of the study. This includes being a paid employee or consultant, receiving honoraria, owning stocks and having a patent agreement. If there's a conflict of interest, you must decide whether it could have influenced (biased) the outcome of the study.

ONE MORE QUESTION

Although it has nothing to do with evaluating a study, another important question is this:

How much does the supplement cost?

In one study, subjects who drank one 12-ounce can of a nutritional product – a "functional beverage" – used an average of 100 more calories in three hours than those who didn't. This is an interesting finding but think about this for a minute. Losing one pound of fat (3,500 calories) requires roughly 35 cans of this particular beverage. At about two bucks per can, that's an investment of about $70 per pound of fat.

But that's actually a bargain compared to another product. In one study, subjects who took three capsules of a "thermogenic" product used an average of about 35 more calories in three hours than those who took a placebo (vitamin E). So losing one pound of fat requires roughly 300 capsules of this particular product. At $39.99 for 90 capsules, that's an investment of about $133.30 per pound of fat.

THE LAST REP

Advertisements for supplements frequently mention a study as proof of efficacy. It's imperative that coaches "study the study" so that they can dispense educated advice on supplements to their athletes.

Matt Brzycki has authored, co-authored or edited 17 books on strength and fitness including four that are devoted to wrestling. His latest book is Youth Fitness: An Action Plan for Shaping America's Kids.