

What Supp



To get more out of your training, you need to back it up with quality supplements. This is your guide to sorting the snake oils from the workout-powering ambrosia

BY DOMINIC CADDEN
PHOTOGRAPHY BY JASPER WHITE

AS HARD AS your training might be, the strain really kicks in when you try to pick your way through the supplement minefield. These powders, pills, drinks and gels claim to provide added value for everything – added strength, muscle size, recovery, endurance, fat loss and so on. But if every product claim was true, we'd all be ripped monsters capable of doing triathlons and training seven days a week.

The challenge is to separate the good stuff from the supplements that literally see you pissing your money away.

There are some general guidelines, of course. Steer clear of supplements with incomplete nutritional information or product descriptions that contain words you can't find in a dictionary. Stick to the larger, reputable brands, rather than a Mexican subsidiary of a minor American pharmaceutical company. And, as a general rule, favour Australian brands, as our labelling laws and the Therapeutic Goods Act

stipulate that Aussie products show the full story about what's going on with the product, at the same time as ensuring it contains nothing dangerous.

To further help you decide which supps are best for you, we assembled a panel of experts comprising some of the country's leading (and impartial) trainers, nutritionists, physicians and, in Ironman Dean Mercer, one of our greatest athletes. Next, we created six functional categories, each containing a shortlist of supplements recommended by the experts. A few of the most popular supplements also made it onto the shortlist because the experts felt they raised questions that needed answering. With the nominees in place, the panel then set to work cutting through the hype before anointing an outright winner in each field. Just think of us as your spotter. ➤➤

OUR PANEL

Dr John Orchard is a sports physician who works with the Sydney Roosters, the AFL and Cricket Australia.



Paul Haslam is a sports scientist who is a former Olympic lifting champion and two-time Mr Australia. In the personal-training field, he's a guru of strength and physique training.



Daniela Manche is an accredited sports dietitian on behalf of Sports Dietitians Australia. She has consulted to Melbourne Victory FC, the Victorian Institute of Sport and Athletics Australia.



Glenn Cardwell is an accredited practising dietitian who regularly assesses and reviews supplements. He is the author of *Gold Medal Nutrition*, which is used as a sports nutrition text.



Tony Doherty owns three Doherty's Gyms in Melbourne. He was a highly successful weights coach for the Carlton AFL team and has coached athletes through his 30 years in the fitness industry.



Dean Mercer has won six Australian surf lifesaver titles, eight World Championship medals and was Australian Ironman champion in 1989 and 1995. In 2010, at age 41, he came fourth in the Coolangatta Gold.





Best for... MUSCLE GAIN

THE NOMINEES

- Optimum Nutrition – 100% Casein Protein 909g, \$92.95
- Vital Strength Extreme Rapid Weight Gainer 1kg, \$49.20
- BSc Nitrovol 1.75kg, \$111.95
- Musashi Bulk 1.2kg, \$49.99

THE WINNER

BSc Nitrovol

This whey-protein concentrate (WPC) formula has equal parts protein and carbohydrate, along with the recommended daily dose of creatine and L-glutamine with each serve. However, your choice should also take into account your metabolism and the time of day you're taking it.



The consensus among our panellists is that muscle-gain drink mixes should be treated as "food in a can" for times when it's difficult to get protein needs from real food.

"You need a variety of protein sources – milk, eggs, beef, chicken and so on," says Haslam.

However, Cardwell argues that too many people go overboard with protein.

"Athletes require extra protein, but most will be able to meet their protein needs through food. The average athlete eats two grams of protein per kilogram [of body weight] and yet only requires somewhere between 1.2g and 1.7g per kilogram unless they've just started weight training."

Protein powders tend to be based on whey protein (WPI, whey-protein isolate or WPC, whey-protein concentrate) or casein. These proteins work at different speeds, so they have different purposes.

"Ideally, after training you want a fast-acting protein – hydrolysed WPI is best, then standard WPI or WPC," says Doherty. "Prior to bedtime, you might want a mix that has casein in it, as casein is a long-acting protein. It also works better for people with fast metabolisms."

Haslam says that a protein-to-carbs ratio of around 1:1

is ideal for hard-gainers, but Ironman Mercer goes for the higher protein mix (7:3) of a formula called BSc Mass Monster because the intensity and incredible volume of his training (up to six hours a day, six days a week) can cause muscle breakdown. He takes it mixed with water 30 minutes before training and immediately after.

Manche favours casein for its long-acting properties and role in preventing muscle breakdown and catabolism (the metabolic breakdown of complex molecules into simpler ones).

"The Nitrovol and Vital Strength powders are whey-based, which works with something called the 'leucine trigger', stimulating the path to forming muscle protein. Combining it with casein (in the Vital Strength formula or a Musashi product called Hybrid 92) enhances the leucine trigger by slowing it down."

Manche says you need carbs in your protein powder to facilitate the absorption of protein and fuel muscle growth, but beware of powders that claim to have everything in them.

"The Nitrovol includes 3g of creatine and 7g of glutamine, which is the recommended intake, but in the Vital Strength product they're just token doses – you'd need six serves a day."

"Most athletes should be able to meet their protein needs through food"

Best for... FAT LOSS

THE NOMINEES

- Max's Reload HGF 1kg, \$88.95
- Udo's Choice Ultimate 3,6,9 Oil Blend 250ml, \$29.95
- Horleys Acetyl-L-Carnitine 120 capsules, \$49.95
- BSc Hydroxy-Burn Pro 900g, \$54.95

THE WINNER

Max's Reload HGF

A small spoonful of a low-carb, high-protein powder post-training is a surefire way to hold muscle as you lose weight, so that you raise your metabolic rate. It also helps curb appetite. Max's Reload HGF does the job with 90 per cent protein and one per cent carbs.



Orchard says that the one surefire thing that will make you lose fat is fibre. "Eating high-fibre food or taking fibre supplements will help reduce absorption of the other food you eat and reduce your hunger."

Our panel agrees that no supplement with claimed "fat-burning properties" works alone – you still need to do the hard yards with diet and exercise. Cardwell is a long-time

sceptic of fat "mobilising" products. "Even if you mobilise the fat, you still have to burn it up. L-carnitine uses the same argument because studies show that carnitine is required for metabolism of fat in mitochondria – but what does taking extra actually do?"

L-carnitine may only work in certain conditions. "That is, when there is a need for fat to be metabolised, such as when there's a kilojoule deficit or you're training hard in endurance activity and you start to use fat as a fuel," says Haslam. "Just having L-carnitine in your system won't make you burn more body fat."

Other products – using words such as "burn", "metabolise" or "lipotropics" in their descriptions – act as a stimulant to get you moving and dull the appetite, but they contain caffeine and should be avoided in the afternoon.

"Caffeine (often listed in the form of guarana) is thought to make fat more available for use in muscle contraction," says Cardwell. Overall, though, Haslam thinks that this group of products gives a small benefit-to-cost ratio.

Haslam points to a trend towards oil blends such as Udo's, which is crammed with essential fatty acids. "We can utilise these fats as carbohydrates for our basic energy needs," he says. "One of the benefits of a high-fat diet is to minimise the insulin response – which deposits body fat."

Doherty often sees overweight people eating too many carbs and not enough protein, so he usually recommends a low-carb, fast-acting (hydrolysed WPI or standard WPI) protein powder that will help curb the appetite, retain muscle and recover from training. "When staying lean is important, look for formulas with a small amount of carbs and take it in relatively small doses after training," says Manche. "Ten grams of protein is all you need to start the muscle-recovery process."

Best for... IMMUNITY/RECOVERY

THE NOMINEES

- **Vital Strength Glutamine Recovery Fuel** 200g, \$33.95
- **USANA Essentials** (Mega Antioxidant and Chelated Mineral) 224 tablets total, \$98.70
- **Vital Strength BCAA** 75 capsules, \$34.95

THE WINNER

Vital Strength Glutamine Recovery Fuel

Glutamine may well play a crucial role in three areas at once – muscle growth, recovery and protecting your immune system as you push your body to its limits.



Orchard advises that, aside from drugs that defend against specific diseases, the best things to build immunity are adequate sleep, good diet and moderate exercise.

"Glutamine has a role in immune protection because some of your immune cells use glutamine as a fuel," says Manche. Haslam also points out that glutamine can be part of the recovery process. "After an intense workout you have a bit of muscle breakdown and your immune system is activated, and glutamine is taken from the muscle for recovery. It may not help every workout, but it's reasonably cheap and having extra does no harm."

The panel agreed that taking a vitamin supplement can be important if you have a deficiency, which Orchard says can be measured by a blood test or guessed at by dietary history and symptoms, but mega-doses can just make for expensive and colourful pee.

"No-one on the planet needs nine times the recommended daily intake of

thiamine or 16 times the B₁₂," says Cardwell of the USANA formula. "If you want to take a multivitamin, you'd be better with a low-dose one, like Centrum."

Cardwell, Orchard and Manche all point out that such mega-doses can even be toxic – especially in the case of vitamin A.

"Fat-soluble vitamins such as D and A are harder to remove than water-soluble ones because they are stored in our liver for quite some time," says Manche. "We also know that excess vitamin E can blunt training responses."

Antioxidants are waved about like the athlete's cure-all, but recent research shows otherwise. "Antioxidants are designed to react with free radicals, so if you take a lot of them and there are not enough free radicals around, they go and attack healthy tissue as well," explains Manche.

The panel is divided on branched-chain amino acids (BCAAs). Orchard believes the evidence is limited and any effect probably only makes up for dietary deficiencies. Manche has not ruled them out, but says the results have been "a bit disappointing" after more than two decades of common use among athletes.

"You get a lot of these BCAAs in a good diet, so that may be why supplementing shows no true benefit," she says. "Athletes tell us they feel better with them, but maybe it is not from a muscular physiology viewpoint, maybe it has to do with mental perception and mental recovery."

On the other hand, Doherty rates BCAAs as the best supplement, as he has used them successfully to aid recovery and muscle growth in athletes for 20 years. Haslam says BCAAs do their best work helping recovery from intense anaerobic workouts – more your low-rest interval training rather than a weights workout. That cuts right into Mercer's turf – he takes BCAAs (and glutamine) before sessions of less than two hours, and before and after sessions of more than two hours.

Best for... ANTI-INFLAMMATION

THE NOMINEES

- **Swisse Ultiboost Wild Salmon Fish Oil** 200 capsules, \$32.95
- **GNC Glucosamine 750 Chondroitin 600** 120 tablets, \$67.95
- **BSc RegenR8** 120 capsules, \$64.95

THE WINNER

Swisse Ultiboost Wild Salmon Fish Oil

Fish oil has been widely proven to have an anti-inflammatory effect across different body systems and general health benefits. Wild salmon sourced from the Atlantic provide higher levels of the omega 3 essential fatty acids, DHA and DPA.



"Compared to prescription anti-inflammatories, most supplements that combat inflammation don't rate," explains Doherty. "But pharmaceuticals aren't good for the wall of your stomach if you abuse them."

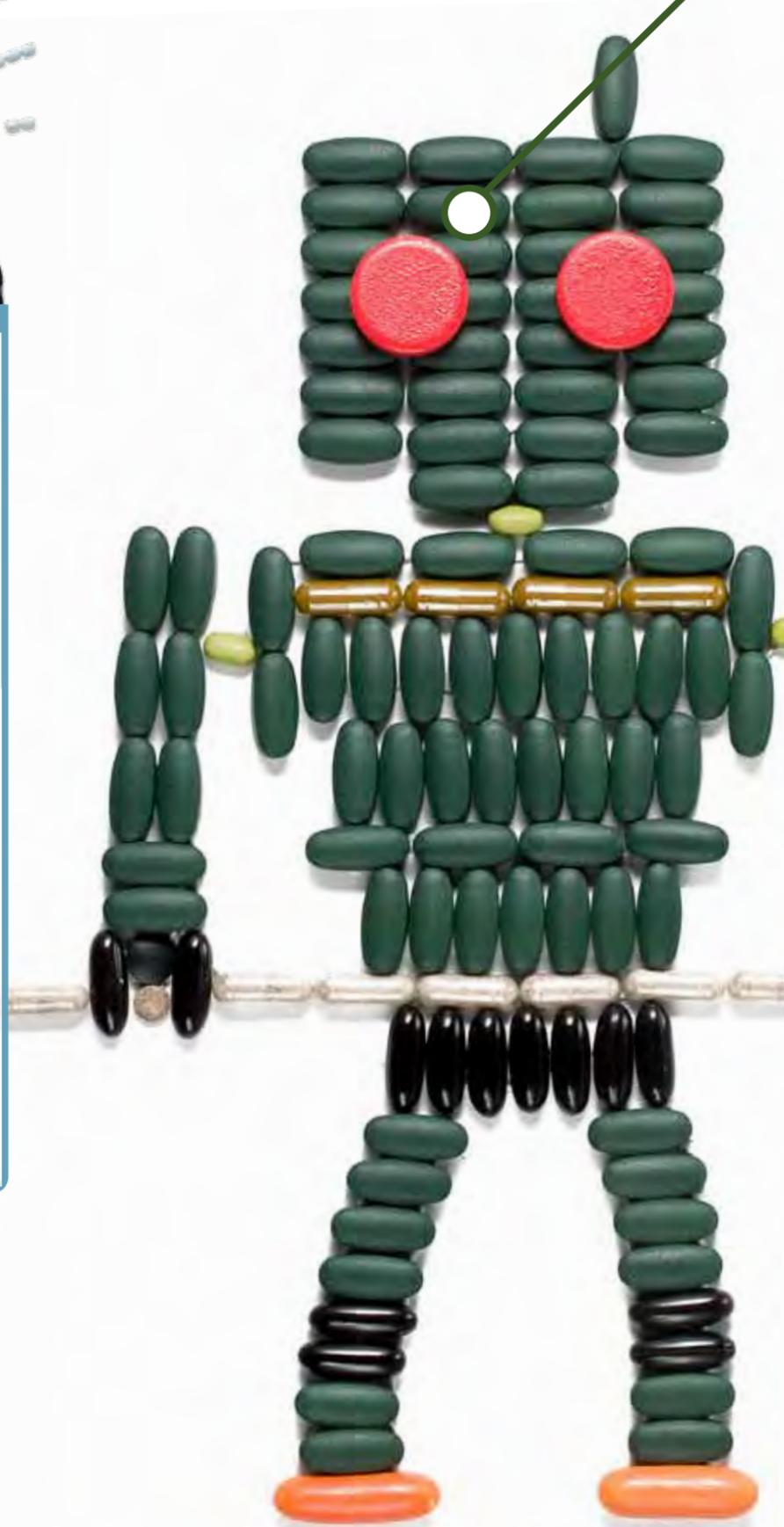
Orchard says there is "limited evidence" that glucosamine may slow down joint degeneration, but Manche says it's well known that fish oil has an anti-inflammatory effect across different body systems. "For athletes, it aids their recovery after a match or training. We recommend two times 1000 milligrams per day from an Atlantic source because the food chain affects the fatty acid, so fish-farmed salmon tend to have lower levels of (fatty acids) DPA and DHA than Atlantic salmon."

Mercer takes fish oil at the same time as glucosamine, which is said to improve the effect of the glucosamine, and he points out that a lot of the surf-lifesaving athletes use glucosamine-based products such as BSc RegenR8 or similar.

"A lot of supplements have glucosamine and chondroitin in combination, but there is just not much evidence for chondroitin," says Manche. "But we use glucosamine in sports such as netball, volleyball and tennis, where there is a lot of repetitive joint jarring. We aim for 750mg twice per day. It does no harm and has anecdotal benefits."

"The only concern is that if you have a shellfish allergy or if you have diabetes, because it can increase your blood sugar slightly," she adds.

"For athletes, fish oil aids their recovery after a match or training"



Best for... ENDURANCE

THE NOMINEES

- **Shotz Electrolyte Tablets** 20 tablets, \$25.95
- **PowerBar Gel** 41g, \$3.25
- **Endura Magnesium Rehydration Formula** 800g, \$39.95
- **BSc Advanced Endurance Sports Drink** 500g, \$21.95

THE WINNERS

Shotz Electrolyte Tablets and PowerBar Gel

These two products work together to help you maintain peak performance in events lasting more than one hour. The Electrolyte Tablets get the thumbs up for their magical ability to turn water into a high-sodium electrolyte drink, while the PowerBar Gel has the optimum combination of sugars and caffeine.



"Electrolytes are 100 per cent proven to enhance absorption and the retention of fluid," says Manche. But there is some doubt about the new buzzword in endurance products – magnesium.

"Magnesium doesn't seem to be of any great benefit to athletes," explains Cardwell. "You lose it in sweat, but it's the sodium lost in sweat that has the greater effect on performance."

Manche agrees on both points. "The higher the sodium content, the higher the fluid retention, and it can also generate greater thirst to encourage further hydration."

Mercer favours the Shotz Electrolyte Tablets – you throw a tablet into 500 millilitres of water and you get a predominantly sodium, high-electrolytes drink. Through the second half of a long race, such as the Coolangatta Gold, he would also take a gel formula every 20 minutes.

"These are good for a session of 90 minutes of high-intensity or 120 minutes of low-intensity activity," says Cardwell. "Look for those with more than one type of sugar (such as the fructose and glucose in the PowerBar Gel), because different sugars can use different 'doors' to enter the cells, making for faster absorption."

Manche says it's useful to have a gel with 25-50mg of caffeine in it for the halfway or three-quarter mark in sports that last longer than an hour – it can help preserve glycogen in the muscle and allows you to use some fat as fuel. "You want between 1g and 3g of caffeine per kilogram of body weight," she says.



Creatine doesn't seem to benefit people who have naturally high creatine levels

Best for... **STRENGTH**

THE NOMINEES

- **BSc Beta Alanine powder** 100g, \$29.95
- **Musashi HMB** 75 capsules, \$43.49
- **GNC Pro Performance Creatine Monohydrate** 500g, \$40.95

THE WINNER

GNC Pro Performance Creatine Monohydrate

Results for creatine may vary from person to person, but this is one of the most widely studied and used sports supplements (the majority of studies have been conducted using creatine monohydrate), with benefits to strength and explosive power, recovery and muscle gain.



Bad news – no supplement will give you the strength of Superman. Some, however, may stimulate you to attack your training with more intensity or put your muscles in the best condition to work harder, recover and even grow, which may eventually make you stronger.

Creatine has been widely studied and is commonly used by elite athletes, but Cardwell warns that it doesn't seem to benefit people who have naturally high creatine levels – and the only way to test that is by muscle biopsy.

Haslam believes the prescribed "maintenance dose" is all you need. "I think the 'loading dose' was invented by manufacturers to get people to use more. I think most of these supplements work for a limited time and then your body adapts to the new stimulus. I find that especially true with creatine, so I'll use it for two weeks, then have two weeks off it."

HMB (beta-hydroxy beta-methylbutyrate) is sometimes used by sports trainers as an alternative to creatine. "Its method of action is different, but the dose is similar – 3g per day divided into three serves," says Manche. "It seems to have more to do with avoiding muscle protein losses, but I would pick creatine over HMB any day."

Haslam says that while studies have shown HMB to work very well, he hasn't been able to convert this in practice for himself or his clients.

The overall commentary from experts suggests that HMB may be helpful in an untrained person early in their training program, but it doesn't seem to have much value for a well-trained person.

Beta-alanine is a muscle-buffering agent that can reduce the build-up of lactate (the "burn") in the muscle so you can push yourself harder. It works inside the muscle cell to form an amino acid called carnosine.

"Four weeks on beta-alanine can produce a 20 per cent increase in muscle buffering capacity or carnosine content, for eight weeks it's 40 per cent and so on," says Manche. "It's good for anaerobic sports, but you can get some tingling and numbness 15-20 minutes after taking a dose and you need to take it four times a day with food for a minimum of four weeks, which can be quite an effort."

Mercer says that he has been taking BSc beta-alanine powder for three months. "I'm impressed. The tingling sensation is bizarre, but it really energises and prepares your muscles for exercise, then I feel the lactate doesn't build up as much."

