

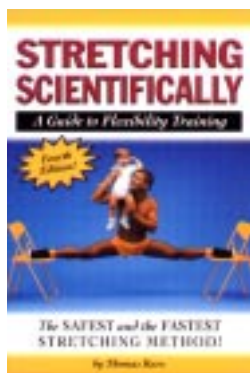


STADION® news
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Stretching Scientifically shows stretches for your whole body

Stretching Scientifically Updated in Fourth Edition

The fourth edition of *Stretching Scientifically* is now available from Stadion Publishing. Improved layout and more photos enhance the most up-to-date science explained in practical terms for athletes, instructors, and coaches.

As always, sports training expert Thomas Kurz stresses the *correct sequences* of exercises and stretches that make up his safest and fastest stretching method. “You have to know when to do which stretch to get the most out of it,” Kurz said. “It’s like putting on your socks and shoes—what goes on

first makes a lot of difference!”

The “Questions and Answers” chapter is bigger and divided into sections such as Injuries and Stretching, Pain or Soreness and Stretching, Age and Stretching, What and When, and Sounds In and Around Joints. Kurz also includes simple tests that will let you test your flexibility potential for splits.

A perpetual bestseller to athletes and coaches worldwide, *Stretching Scientifically* has brought Kurz to the forefront of flexibility training. If you teach others, you must know this method.

Highlights

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Flexibility and Strength

“I have purchase your book *Stretching Scientifically* and your video *Secrets of Stretching*. Within three months of following your program I have successfully done the splits without a warm-up. I have improved my kicks too. I now can execute 5 kicks within a second (shin kick, high hook kick, reverse hook kick, extreme high side kick, middle side kick) without a warm-up.

“I am very thankful for the effectiveness of the programs you have included in your book and video.

“Thanks again, best regards and more power to you.”—Kenneth Pua



Kenneth Pua, Manila, Philippines

HMB

by Piotr Drabik

HMB (3-hydroxy-3-methylbutyrate) was discovered in 1995, and about six years ago it became one of the most popular sports supplements on American and European markets. Some people claim that HMB will be the most efficient and most widely used supplement since creatine. HMB is a totally nontoxic supplement, well tolerated by humans. There are no known contraindications to taking HMB. There is very little known about the molecular mechanism of HMB activity, however.

HMB is a molecule occurring naturally in animal- and plant-derived foods. It is also produced in the human body. In a person of 70-kg mass, daily synthesis of HMB is between 0.2 and 0.4 grams.

HMB is a metabolite of leucine that is directly synthesized from 2-ketoisocaproate by a cytoplasmic enzyme called 2-ketoisocaproate oxygenase. HMB can be found in small quantities in citrus fruits (especially grapefruits), some fish species, red wine, red meat, and milk. For comparison, American catfish has 150 micrograms per 1 kg, salmon has much less—12 microgram/kg, grapefruit—120 microgram/kg, red meat—5 microgram/kg, white cheese—21 microgram/kg, and yellow cheese—12 microgram/kg.

Exactly how much HMB should be taken—in other words, what is the upper limit of HMB dosage—is difficult to tell because its rate of absorption by the digestive system has not been determined yet. It

is known, however, that deficiency of HMB does not occur. There is never too little to function normally (provided other systems work well), and if there is more HMB than a person normally produces (i.e., up to a few tenths of a gram), the surplus may help in some physical efforts. Thus far practical experience shows that an effective HMB dosage is between 0.5 and 3 g per day for a few weeks. Taking much more (for example, 6 g per day) does not increase strength or muscle mass more than taking 3 g per day.

Until more is known about this supplement, it is wise to err on the side of caution and to refrain from artificial or synthetic megadoses. Instead, get extra HMB from natural sources by increasing the share of citrus fruits and fish in your diet. (General information on designing athletes' diets and how to integrate nutrition with training is in *Science of Sports Training*.)

In people who exercise, HMB decreases the rate of protein breakdown in muscles. The precise molecular mechanism of this action is still unknown. There is a hypothesis that HMB binds to proteases (enzymes that break down proteins via hydrolysis) and changes their conformation, which in turn inactivates them. In living organisms, proteins are formed and broken down all the time. The relative rates of these two processes influence the total protein concentration in the cell. When breakdown is limited, the amount of proteins increases.

Thus, HMB increases muscle mass by limiting protein breakdown in muscle cells. Because the muscle's force is linearly correlated with the muscle's cross-section, the larger the muscle's bulk, the higher its strength.

In addition to increasing strength, HMB also slightly decreases fat contents in the body. At the dosage of 0.5 g to 4 g per day, HMB accelerates anabolic effects of training by up to 50%, decreases the total cholesterol concentration, and improves immune system functions by stimulating metabolic activity of phagocytes and increasing proliferation of lymphocytes (T cells and B cells).

HMB is not recommended for athletes who do not want to gain mass (for example, endurance athletes and athletes in sports with weight classes, such as boxers or weightlifters, during times when they must keep their weight down). Athletes who do not want to decrease their body-fat content, such as marathon swimmers, should carefully consider whether supplementing HMB will help or hurt their performance.

Let us know what you think about our newsletter. Have you learned something that improved your or your athletes' performance or health? What would you like to learn more about? Write to us at our address:
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e-mail: news@stadion.com

Supplements and Performance

by Thomas Kurz

Supplements may improve performance but only if you train properly. Taking supplements while training incorrectly or insufficiently is a waste because they deliver less improvement compared with exercising right, resting right, and eating right but cost a lot of money. Doing the right exercises at the right time and in the right order does not cost any more than doing exercises wrong—actually doing exercises wrong eventually costs much more than doing them right. (Think about wasted opportunities and injuries.) Eating right also does not cost more than eating junk that robs you of energy and good health.

Supplements can't compensate for improper training and bad nutrition. Supplements make sense if taken within a fully optimized training and nutrition program and only at the point when you train so hard that even the best nutrition cannot supply enough nutrients.

Some supplements are nothing but crutches that mask deficiencies of training programs. I observed people who took ephedrine to improve their endurance. They did not work enough on their endurance and then, come a race, took ephedrine only to drop out of the race because of heart palpitations or an outright anxiety attack.

Here is the *Position Statement on Nutritional Supplements* from the Sport Nutrition Advisory Committee of the Coaching Association of Canada:

“Optimal physical performance requires commitment to a well-designed training and nutrition program, plus working as hard or harder and as smart or smarter than your competitors. Once these fundamentals are in place, supplements, along with optimal training, may help keep you at your peak performance level. Supplements, however, are NOT a shortcut to optimal performance.”

What's in Your Energy Bar

by Thomas Kurz

If after eating an energy bar or meal replacement bar you “don’t feel so good” there are reasons for it. These reasons very likely are the toxic food additives in your bar.

The most common toxin in food additives is MSG (monosodium glutamate). In processed foods, MSG may be present as a result of processing and not because it is added, and so it is not listed in ingredients. Reactions to MSG vary depending on the person and may occur at any time within 48 hours of ingestion. The symptoms include depression, anxiety, hyperactivity, headache, intestinal discomfort, flu-like achiness, joint pain, stiffness, and skin rashes.

Other toxins frequently added to food are aspartate and L-cystine. These are all excitotoxins—substances that at high concentrations cause nerve cells to fire abnormally and eventually to die.

Excitotoxins likely aggravate or even cause such neurodegenerative brain diseases as Parkinson’s disease, Huntington’s disease, ALS, and Alzheimer’s disease.

Hidden Sources of MSG

The food industry disguises excitotoxic additives such as MSG under different names or even lists some that are less known, counting on consumer ignorance (how many of us know what each ingredient really is and what it does?). Some excitotoxins, such as aspartate and L-cystine, require no labeling at all according to FDA rules.

Below are partial lists of food additives that contain MSG:

Additives that always contain MSG

- All caseinates (such as sodium caseinate and calcium caseinate)
- Hydrolyzed protein (vegetable, plant)
- Hydrolyzed soy
- Hydrolyzed oat flour
- All isolates (such as milk isolates, protein isolates, soy isolates, whey isolates)
- Textured protein
- Plant protein extract
- Yeast extract
- Autolyzed yeast
- Corn oil

Additives that likely contain MSG

- Malt extract or flavoring
- Bouillon
- Broth
- Stock
- Flavoring/natural flavoring
- Natural beef or chicken flavoring
- Seasoning/spices

Additives that may contain MSG or other excitotoxins

- Carrageenan
- Enzymes
- Soy protein concentrate
- Whey protein concentrate

(Source: *Excitotoxins—The Taste That Kills* by Russell Blaylock, MD)

Aspartate

Aspartate is a component of the artificial sweetener Aspartame, which should not be consumed at all. It’s commonly used in “low-calorie,” “diet,” or “sugar-free” foods and soft drinks. Aspartame breaks down at room temperature into cancer-causing components and for a long time has been associated with headaches, dizziness, and neurologic reactions.

Other Sweeteners

Artificial sugars or sugar substitutes such as xylitol, mannitol, maltitol, sorbitol, polydextrose, and sucralose are not required by the FDA to be counted as sugars or carbohydrates. The long-term effects of these sugar substitutes are not known.

High-glycemic index sweeteners such as sugar, high-fructose corn syrup, maltose, and dextrose can make the blood sugar level unsteady. By raising the acidity of saliva, they create conditions that promote tooth decay.

Ingesting glucose stops growth hormone releases associated with physical effort. (Normally, during physical efforts growth hormone concentrations may reach levels 10 to 20 times higher than its concentration at rest.) Also, people on high-carbohydrate diets experience reduced releases of growth hormone during effort.

Fats

The worst fats are the hydrogenated and partially hydrogenated fats/oils, which contain trans-fatty acids. Most common

sources of trans-fatty acids are fried foods, shortening, and margarine. If the label on a bar says “peanut butter” it likely means peanut butter with hydrogenated fat. The only peanut butter to eat is natural peanut butter.

Hydrogenation is a process that saturates unsaturated fatty acids to keep them from turning rancid. It combines an unsaturated oil with hydrogen to produce a solid fat. Any oil will become hydrogenated when heated at or above 350°F.

Hydrogenated and partially hydrogenated fats interfere with the normal metabolism of fats, raise total blood cholesterol and LDL cholesterol (the bad cholesterol), and lower HDL cholesterol (the good cholesterol). These fats interfere with glucose management (raise risk of diabetes) and the immune response and lower the level of testosterone in males. By disturbing normal fat utilization, hydrogenated fats impair endurance. They also cause the formation of free radicals. The human body has no enzymes to metabolize hydrogenated fats and so they get stored. These fats can remain in the body for more than 50 days. But even worse, hydrogenated fats block the body from using other fats for energy and for making hormones and prostaglandins, so the other fats get stored too. It does not take a lot of hydrogenated fat to do all this damage. The first 1% in a diet will block nearly all normal fat metabolism.

Next are fractionated oils and tropical oils (palm-kernel oil, coconut oil). Fractionated oils contain mostly saturated fats because mono- and polyunsaturated fats are processed out of them. Palm-kernel oil raises LDL cholesterol, but palm-fruit oil is safe.

Synthetic Vitamins

Some bars contain synthetic vitamins, most of which are poorly absorbed and some that are outright harmful in their isolated or unnatural forms. For example, synthetic folic acid may damage the nervous system and isolated alpha-tocopherol (labeled as vitamin E) can have effects opposite to the antioxidant effects of natural vitamin E.

For more information on nutrition, check out <http://www.mafbionutritionals.com>.

Q and A on STRETCHING and TRAINING

(continued from previous issue)

Study these typical questions on stretching and training carefully. You may find information that relates to questions of yours. Questions are in *italic boldface*.

■ *I have trained in Martial Arts for many years, but until I discovered the information by Tom Kurz my stretching routine was restricted to relaxed stretches (I could achieve a relaxed front and side split).*

Since discovering Tom Kurz's method I have been strengthening as recommended. I have now incorporated it into my routine and have improved all around (including the quality of my front and side split).

At the end of my strength workout when I perform isometric tensions, the first two sets I perform as recommended but on my third set I place my hands on the floor and lower myself using relaxed stretching (usually into a full split) and then apply isometric tension for 30 seconds. Is there any reason why I shouldn't do this? It is very frustrating having good relaxed splits with my isometric splits trailing behind.

If you do not experience muscle soreness after such application of isometric tensions, then perhaps it is ok for you. I would expect great muscle soreness with your method of stretching. The fact that your range of motion in isometric stretches trails behind your range in relaxed stretches means that your muscles are not strong enough to support you at ranges of movement greater than what you currently display in isometric stretches. Skipping stages of training can be very costly.

■ *I can currently lift two sets of 15 repetitions in bent-knee deadlifts with my body weight (around 95 kg), and on advice from Tom Kurz's articles I have changed to stiff-legged deadlifts, but I can't lift anywhere near that weight. I assume this is due to lack of strength in my hamstrings. My question is, do I start over with a lower weight in stiff-legged deadlifts and work my way up again, or should I alternate the heavier bent-knee deadlift and lighter straight-leg deadlift?*

Unless you are a weightlifter or a powerlifter, the purpose of lifting weights is to increase your strength and not to lift more weight.

■ *I just want to ask when to assume the horse-riding stance in a workout. After my kicking routine I usually go straight to weight training, but now I have decided to incorporate the horse-riding stance back into my workout. I do two sets of 5-minute stances after kicking as a warm-up before weight training. Should they be performed before or after weight training?*

Generally, I would do static exercises such as stances after dynamic exercises such as lifting weights for reasons explained in the *Science of Sports Training*. Also, you should feel that after lifting weights you can sink deeper into the stance than before lifting.

■ *You have mentioned you like to perform high-rep exercises such as Hindu squats after your strength workout. Where do these high-rep exercises fit in to the whole workout exactly? Is it after heavy strength exercises and before isometric stretching? Are there other high rep-exercises you recommend besides push-ups, sit-ups, etc. (for instance, good mornings with no weight)?*

P.S.: These articles are the best source of training information I have come across. Thanks.

I do high reps after isometric stretching. Read about their function and you will understand why.

I never tried really long sets of such back exercises as good mornings, deadlifts, and bench extensions. Never felt the need nor any particular benefit, especially since I am not a rower. The most reps I have ever done in back extensions with a weight was 50. There are exercises involving back extension while standing but these are specific for grappling, they do not resemble the aforementioned lifts, and I do them in long sets when the mood strikes me.

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