

What effect has caffeine?

Optimum caffeine dosage

In terms of research on optimum caffeine dose rates, a large number of studies have reported a wide range of results. These can be summarised as follows (all figures in milligrams of caffeine per kilo of bodyweight – mgs/kg):

- **Events from 30-60 minutes' duration** – in runners, doses of 3mgs/kg and 6mgs/kg enhanced performance, but 9mgs/kg had no effect¹. In cyclists, doses of 5, 9 and 13mgs/kg all produced enhanced performance, and the magnitude of performance gain was the same for all doses², while another cycling study produced performance gains with doses of 2.1, 3.2 and 4.5mgs/kg, the gains being greatest at 3.2 and 4.5mgs/kg³.
- **Events over an hour** – intakes of 1-2mgs/kg enhanced cycling performance at the end of 2 hours of cycling to the same degree as 6mgs/kg given at the beginning⁴. Some researchers have suggested that this is because individuals may become more sensitive to caffeine as fatigue accumulates.

In short, the recent balance of scientific opinion about the likely caffeine dose required to produce a performance effect can be summarised as follows:

- For events less than 30 minutes, 6mgs/kg
- For events of 30-60 minutes, 3-6mgs/kg
- For events over one hour, 3mgs/kg or less

There's also evidence that when it comes to caffeine dose, unless the event is very short, less may be more (and more

could be less)⁵. When trained cyclists took either 3mgs or 6mgs of caffeine per kilo, their performance was significantly improved compared to no caffeine; however, it improved more (4.2% reduction in time) when taking the 3mg/kg dose compared to the 6mg/kg dose (2.9% reduction). When the scientists number crunched the data, they found that the increase in performance when taking caffeine was essentially the same regardless of the dose taken – i.e. the extra 1.3% performance increase measured by researchers when the cyclists took 3mgs was not statistically meaningful. In a larger study with more subjects, it might have been possible to show that a 6mgs/kg dose produced significantly worse performance than a 3mgs/kg dose. Regardless of this, these results definitely showed that taking 6mgs/kg gave absolutely no additional performance over a 3mgs/kg dose.

How much caffeine should we be taking?

If you're a regular caffeine user, how can you apply these findings to your own training? Here are some tips:

- For races/training over an hour, stick to a caffeine dose of 3mgs/kg. Higher doses won't give additional performance gains and may even be detrimental.
- Caffeine breaks down only slowly in the body; this means that there's no need to top up unless your event exceeds two hours and even then, just 1-2mgs/kg is likely to be ample.
- Bear in mind that not everyone responds uniformly to caffeine so use these figures as a good starting point for further experimentation rather than gospel.

This article was supplied by Henk Janse van Vuuren, Vice Chair for VSHSAO

Red Bull! It will give you wings

RED BULL! It will give you wings

Deur Prof Yoga Coopoo, Phd Board Member, *SA Institute for Drug-Free Sport*

Red Bull is one of the latest energy drinks that athletes have flocked to in search of that magic formula to enhance performance. The drink popularized by the Rave culture to party all night long also carries with it an air of intrigue in sport. Athletes who have been selected for drug testing at events have been apt to “declare” Red Bull under the list of “Medications taken”, if it was consumed that day. Recently, at a junior SA Championship, adolescents were witnessed consuming Red Bull in a toilet, as if it were some illicit drink.

So what is the appeal behind this drink?

Red Bull is a non-alcoholic stimulating drink containing:

Taurine, a natural amino acid which is useful for protein synthesis.

Glucuronolactone, a natural substance which eliminates endogenic and exogenic toxins from the body.

Caffeine, a stimulant.

Vitamins, flavourants, glucose an sucrose.

The ingredient of special appeal to athletes is the Caffeine. This substance is on the IOC list of prohibited substances. A

concentration greater than 12 micrograms per millilitre of caffeine in an urine sample constitutes a doping offence. To achieve this concentration one would have to consume, two to three hours before an urine sample is collected, between...9 – 11 cans of cola, or 2 – 6 cans of Red Bull!! The caffeine levels would peak within 45 – 60 minutes depending on the individual's metabolism. The concentration of caffeine in the urine is also dependant on the individual's weight, metabolic rate and recently digested food in the body.

The potential performance-enhancing effects of this high concentration of caffeine in the urine may be beneficial for individuals engaging in endurance events such as marathon running and road cycling! During these activities caffeine tends to increase utilization of fatty acids for energy and has a "sparing" effect on carbohydrate (primary energy source) utilization, thereby increasing the ability to sustain exercise during these activities.

Documented research has indicated no performance-enhancing benefits of caffeine ingestion for activities involving strength and/or power, such as sprints or events less than 30 seconds. The performance limiting aspect of caffeine ingestion for endurance events is that it stimulates the formation of urine the removal of water from the body. Dehydration is therefore a distinct possibility for the distance runner, which can be compounded when competing in hot and humid conditions. The probable popularity of Red Bull among athletes may be all myths surrounding the ingestion of caffeine and the consequent performance enhancing effects. One should also not discount the allure of the company's advertising slogan: "Red Bull gives you wiings."

Bibliography: The ABSA Coaching Journal, Volume 2, An ASA development project, May 1999

"What and when to eat"

"What and when do I eat"

by *Rudolph Cloete, VSAAV en ASA Level III*

Nutrition denotes all the foods a person eats or drinks. What we eat, when we eat and how we eat it, will determine the quality of our performance as athletes! Food is the fuel of the body and this "fuel" is measured in calories.

But this food intake, and the calories they produce, is a balancing act: not enough and the athlete's performance will suffer, too many and the athlete will store the excess as fat tissue, which will reduce performance. Therefore, each athlete should know his/her "fighting weight", and use this number as norm for the calorie-intake!

My advice to you is: Consult a dietician to find out what the basic calorie requirement for your weight and body type is – then double that number if you are practicing about 2 hours per day! Then monitor your weight so that you can react to weight gain as soon as possible!

The 6 classes of nutrients needed to balance the diet are:

1. Carbohydrates
2. Fats
3. Proteins
4. Vitamins
5. Fiber
6. Fluids

with the first 3 responsible for the calories needed!

<u>% DAILY CALORIES</u>	<u>FOOD TYPE</u>	<u>EXAMPLES OF FOOD</u>
60 -65%	Carbohydrates	rice, pasta, potatoes, bread, sweets
20%	Fats	veggies, red meat, dairy products, olive oil, peanuts, butter
15 – 20%	Proteins	eggs, milk, fish, beef, soya, oats

I don't want to be caught up in the arguments of Banting diets or energy drinks or other supplements: an athlete should consult a doctor before considering these!

Useful tips about eating habits:

1. Vegetables and fruits should be eaten raw at every meal.
2. Unrefined grain products must be part of the diet.
3. Eat 3 meals per day – and all of them should include small portions of protein. Some sources suggests that 5 – 6 small meals per day would ensure a more stable energy level all day long – which would be better on competition days!
4. Carbohydrates must fill more than half of your plate but stay away from sugar, rather use starch as fuel for calories. Drink water when thirsty – small sips at regular intervals, before, during and after competitions or practices! One glass of water should accompany all meals. Stay away from alcohol.
5. Don't add extra salt to food...normal use of salt in food will be enough! Stay away from salty snacks! Rather eat fish, chicken and veal in the place of red meat.
6. Meals should be prepared with olive or sunflower oil. Canola products are also advised. Avoid boiling or frying

your food – rather grill, steam or bake.

Pre-competition nutrition:

What you eat and when you eat it before a competition will affect your performance level.

1. The last meal before the competition starts should be taken 2-4 hours before. If this meal is a special liquid meal, the time comes down to 1-2 hours.
2. If breakfast is far away from the start of the competition, don't eat bacon and eggs for breakfast as fats and protein are slowly digested. Oats or mielie meal porridge or Bran cereal will be adequate.
3. If the competition is in late afternoon, stay away from hamburgers/hotdogs during the day. Rather eat smaller meals of not more than 500 calories at regular intervals. Again, a special liquid meal – pre-made at home and stored in a flask/plastic holder – 1 to 2 hours before competing, will benefit the you the most.
4. Drink small amounts of (room temperature) water often during a competition day.

During competition

1. It is not recommended that athletes eat anything during competitions.
2. Drink small amounts of (room temperature) water often during competitions. During long distance events the organizers will supply watering points – make use of them.

During field events bring your own bottle of water with you.

Post-competition nutrition

1. It is very important that the athlete must replace the energy used during competition, within 15 minutes after the event. A handful of peanuts and raisins will shorten the recovery time.

2. Hydrate by drinking water is essential.
3. In the hours and days after a competition lots of carbohydrates, protein, vitamins [A and B] and minerals must be taken in...less so for sprinters and field items, more so for long distance/cross country/ endurance events.

Again, I am not against supplements – I am only recommending that these products must be taken on medical advice! There are a lot of supplements on the market – and they will help in the most cases – but be aware of the doping requirements of the ASA...one can unwittingly transgress by using the wrong medication/supplements!

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"Shin Splints"

"Shin Splints"

Deur Rudolph Cloete, ASA en VSAAV Vlak III

“Shin Splints” of “Medial Tibial Stress Syndrome” is wanneer inflammasie/ ontsteking en pyn in die binnekant van die laer been voorkom. Dit betrek die tibia, ‘n been in die laer been, m.a.w. onder die knieg/bokant die enkel. [Engels “shin”/ Afrikaans “skeen”]. Dit gebeur wanneer die weefsel wat die spier aan die omhulsel van die tibia heg, geirriteerd raak.

Indien jou atlete genoodsaak is om aanhoudend op ‘n harde oppervlakte soos ‘n gimnasiumvloer of ‘n teerpad te oefen, is hulle kans 100% om shins te ontwikkel! ...en as hulle eers shins het, is **rus** omtrent die enigste terapie wat werk. ‘n Kursus “Cataflam” sal help met die bestryding van die ontsteking van genoemde weefsel, maar dit sal slegs opklaar indien die oefeninge, wat die shins oorspronklik veroorsaak het, ophou. Indien die simptome egter geïgnoreer word, sal die shins so erg raak dat die atleet nie meer kan deelneem nie en dan is ‘n operasie nie uitgesluit nie!!

Ons as afrigters moet bewus wees van die **risikofaktore** om shins te veroorsaak, sodat ons dit kan vermy:

1. Onvoldoende strekoefeninge as deel van opwarming voordat ons met die daaglikse program begin. Skoolafrigters het so min afrigtingstyd en daarom moet ons bedag daarop wees dat ons nie die strek- en opwarmingsoefeninge afskeep om tyd op te maak nie!!
2. Buitengewone vermeerdering van die oefenbelading of die intensiteit daarvan! Dit gebeur gewoonlik omdat ons te haastig is om ons atlete se prestasies te verbeter...weereens iets waaraan ons skoleafrigters hulself skuldig maak omdat ons oefentyd so beperk is. Kwantiteit en kwaliteit is teenoorgesteldes in ‘n oefenprogram en albei moet geleidelik vermeerder word!
3. Swak of uitgediende oefen- en/of spykerskoene. Ons almal weet dat skoene duur is, maar uitgetrapte oefenskoene ondersteun nie meer die atleet se voet of doen die

nodige skokabsorpsie gedurende oefening nie! Daar is deesdae spesiale soorte spykerskoene, wat so ontwerp is om die maksimum ondersteuning te bied aan gespesialiseerde items soos Verspring, Driesprong, Naellope, Hoogspring, Worpe, ens.

4. Verkeerde voetplasings daar waar die “tekkie die teerpad slaan.” Ons is baie geneig om spesifieke spiergroepe te oefen, maar ek sien selde dat afrigters dieselfde aandag gaan aan voete en enkels! “Platvoete”, m.a.w. waar die voetboog laag is, lei ook tot ‘n geneigtheid om shins te kry!

Ek wonder hoeveel van ons skoleafrigters het al hul atlete se kaal voete gesien? Deesdae se kinders loop nie meer so baie kaalvoet deur die loop van die dag nie! Weet ons of ons atlete “plat voete” het? Voetvratte is ook ‘n toestand wat baie onder skoolatlete voorkom. Ingroeitoonnaels sal verseker ‘n atleet se prestasie beïnvloed!

MAAR die groot ding is dat ons ons atlete se voete en enkels sterker en meer effektief/mobiel moet maak:

i) Enkelrotasies – links en regs om.

ii) Staan op los mat/handdoek en trek dit met jou tone onder jou in.

iii) Haak ‘n handdoek om die voorvoet en trek voet agtertoe terwyl jy prober terugrem deur die tone te spits.

iv) Kuitopstote – vrystaande of in ‘n gimnasium in ‘n “calfraises” masjien.

v) Loop vir 5-10 treë op die binnekant van die voet met knieë wat teenmekaar gehou word.

vi) Loop vir 5-10 treë op die buitekant van die voet deur die bene “bak” te maak!

Shins is ‘n negatief, wat die skoolafrigter se oefentyd

“steel” wanneer ‘n atleet moet rus om van shins ontslae te raak. Wees liewer bedag daarop om minder pleometriese spronge te doen, minder op die tone te hardloop, meer geld te spandeer aan goeie oefenskoene, minder opdraendes/afdraendes te hardloop gedurende die oefensessies – m.a.w. probeer liewer shins verhoed.

Laastens, moet nie no 1 hierbo vergeet nie! Kondisioneer jou atleet om die vermeerdering in belading of intensiteit te kan hanteer! Die skoolafriester mag elke jaar ‘n beperking op sy/haar beskikbare oefentyd ervaar, MAAR gelukkig het ons gewoonlik 4-5 jaar om die atleet op sy piek te kry! Wees geduldig!

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Oorbelaadingsbeserings

OORGEBRUIKSBESERING IN ATLETIEK EN DIE BEHANDELING DAARVAN

Hierdie is ‘n uittreksel uit “Voorkoming en behandeling van Sportbeserings” geskryf deur Dr Dawie van Velden, Uitgegee deur die Mediese Vereniging van SA, Pyramid Uitgewers, 1990.

Sportbeserings kan op vele maniere verhoed en ook verminder word indien soveel moontlik omtrent hul oorsake bekend is.

Oorgebruiksbeserings

Oor die afgelope paar dekades het voorbereiding vir atletiek al hoe meer intersief geword en kompetisies al hoe strawwer. Dit het uiteraard tot 'n vermeerdering in oorgebruiksbeserings gelei.

Oorgebruiksbeserings is waar 'n atleet sy/haar liggaam vir lang periodes aaneen ooreis en die spiere, ligament en gewrigte uitermatig baie gebruik: in langafstandhardloop kan liggaamsweefsels beskadig word; in items, waar die betrokke tegniek nie korrek uitgeoefen word nie, kan spiere sowel as gewrigte en ligamente beseer word. Dan praat ons van oorgebruiksbeserings, in teenstelling met kontak sportbeserings. Eersgenoemde word ook INTRINSIEKE beserings genoem omdat daar geen eksterne trauma hierby betrokke is nie.

As gevolg van oorgebruik ontstaan daar inflammasie in die beskadigde weefsel, wat op sy beurt pyn, swelling en funksieverlies in die ledemaat of gewrig veroorsaak.

Die **oorsake van oorgebruiksbeserings** is uiteenlopend en sluit veral 3 oorsake in, nl.

Genetiese faktore:

Aangebore fisiese afwykings van enige liggaamsdeel, hoe gering ookal, word deur 'n intensiewe oefenprogram onder groot druk geplaas.

Omgewingsfaktore

Die omgewing waarin die sport beoefen word, kan 'n sterk invloed op die atleet se liggaam hê en weefsel beskadig. Hier dink ons aan 'n ongelyke hardloopoppervlakte, landingsarea's in ver- en driesprong, hoog- en paalspring, verkeerde skoene, ens.

Oefenfaktore

Verkeerde oefenmetodes is seker die algemeenste oorsaak van stresbeserings! Een of meer van die volgende 3 faktore is gewoonlik betrokke:

- Die oefenprogram is te lank [kwantiteit]
- Die oefenprogram is te straf [kwaliteit]
- Die vordering met die oefenprogram is te vining [progressie]
- Oorgebruiksbeserings ontstaan in die swakste skakel in die muskuloskeletale stelsel: hakskeenpyn, kniepyn en liesbeserings, waar die inplanting van spiere op die skelet nog nie so sterk is nie, kom algemeen by jong atlete voor. Die ouer skoolatleet ervaar agterdyspier, lies-, knieg- en enkelligamente wat oorgebruik word. Die **behandeling van oorgebruiksbeserings** moet nougeset uitgevoer word, want die verwaarlosing van hierdie beserings kan ernstige gevolge [selfs operasies] vir die atleet inhou! Siende dat ons nie dokters/fisio's is nie, maak ons gebruik van die Engelse afkorting, nl. **R.I.C.E**, as noodmaatreeël as die besering plaasvind:
 - **Rest:** Stop die oefening dadelik.
 - **Ice:** Sit ys op die area om swelling teë te werk. Dit sal die dokter help as die betrokke area nie geswel is as ons daar kom nie...anders kan die herstelperiode moontlik verleng word.
 - **Compression:** Immobiliseer die ledemaat met 'n verband indien moontlik
 - **Elevation:** Lig die ledemaat op sodat bloed nie nou daar versamel nie.
 - **...en neem dan die atleet direk na 'n dokter!**

En as/wanneer die atleet terugkeer na die oefenveld, moet die afrigter beseft dat die atleet nie sommer weer kan begin waar hy/sy laas was nie. 'n Gelydelike infasering in die program in sal uiteindelik weer die atleet so kondisioneer dat hy/sy kompetender sal kan wees!

In die **rehabilitasieproses** is die atleet, afrigter, dokter en

fisioterapeut in 'n span saamgesnoer: elkeen moet sy deel bydra om die rehabilitasie so effektief moontlik te maak tot voordeel van die atleet! Almal, maar veral die atleet en afrigter, moet die besering verstaan en betrokke wees by die herstelproses

Gereelde rusperiodes en doeltreffende strekoefeninge voor EN na EN gedurende oefeninge, sal ver gaan om jou atleet gesond en beseringvry te hou!