

Fat but fit? Maybe not

The belief that overweight people may still be able to exhibit good levels of fitness has been challenged by recent research from the US.

The study of 39,000 women by Harvard-affiliated researchers found that although they have a lower risk of heart disease than their sedentary overweight counterparts, active overweight females still have significantly higher health risks than normal-weight active individuals. Heart specialist Dr Martha Gulati, said, 'It doesn't take away the risk entirely. Weight still matters'.

The new study looks at the combined effects of physical activity and body mass on women's chances of developing heart disease. At the outset of the study, participants (whose average age was 54) answered questions relating to their height, weight and levels of physical activity. The women were then tracked for 11 years, during which time 948 of them developed heart disease.

Weight was evaluated using BMI, with a measurement of between 25 and 29 being deemed overweight, and 30 or above being considered obese. The participants were considered to be active if they partook in a minimum of 30 minutes of moderate activity on most days of the week (according to government-recommended guidelines). Those who exercised less than this were deemed inactive.

The data collected revealed that, compared with active women of normal weight, overweight active women had a 54 per cent higher risk of developing heart disease. This risk increased to 87 per cent among obese active women. Although considerable, these increased chances of heart disease paled when compared to the rates in inactive women; overweight inactive women had an 88 per cent higher risk of developing heart disease, and obese inactive women were at a huge two and a half times the risk.

Lead study author, Dr Amy Weinstein of Boston's Beth Israel Deaconess Medical Centre, said 'It is reassuring to see that physical activity really does make an impact', but also implied that fat loss was still necessary for overweight and obese individuals, saying, 'If you're overweight or obese, you can't really get back to that lower risk entirely with just physical activity alone'.

Obesity expert Steven Blair, a proponent of the 'fit and fat' theory, questioned the findings of the study, criticising the limitations it faced by relying on the integrity of participants when it came to reporting their levels of physical activity. Blair's own research using treadmills tests, which he claims to be more objective, previously found that overweight people considered to be fit by his reasoning, didn't face a heightened risk of dying from heart disease.

Irrespective of which research may be 'correct', Dr Laura Concannon, a specialist in treating overweight patients at Chicago's Advocate Illinois Masonic Medical Centre, welcomed the research findings, saying, 'Anything that can motivate the public is useful because heart disease is becoming a bigger and bigger problem as levels of obesity increase'.

Source: Archives of Internal Medicine

Exercise may help prevent cognitive decline

A new American study has shown that regular physical activity may help to protect against mild cognitive impairment.

Researchers from the Mayo Clinic studied 868 people between the ages of 70 and 89 who were already participating in the clinic's ongoing study of the effects of ageing. Of this group, 740 were deemed to be cognitively normal, while 128 had mild cognitive impairment. Mild cognitive impairment sufferers can usually cope with daily activities but will often experience difficulty recalling dates, events and details of conversations. For many sufferers, the condition is caused by the onset of Alzheimer's disease, and they will experience a progressive decline in their cognitive abilities.

Information was gathered about the participants' exercise levels between the ages of 50 and 65 and during the year prior to the survey. While moderate physical activity during this first period was linked to a reduced incidence of cognitive impairment, the same level of activity directly prior to the study did not display the same association.

Lead study researcher and neuropsychiatrist, Dr Yonas Geda, noted that the study did not answer the question of *how* exercise may help protect against mild cognitive impairment, saying, 'Regarding the mechanism of action of physical exercise and mild cognitive impairment, we speculate that either exercise induces chemicals that protect brain cells, or exercise is simply a marker for an overall healthy lifestyle, or there is some positive interaction among exercise, healthy lifestyle and intellectually stimulating activity'.

Source: *American Academy of Neurology*

Business and environment: the other costs of obesity

Researchers from the UK have pointed their fingers at the increasingly obese world population as a contributory factor of global warming.

Obese and overweight people use more fuel to transport them and to transport the food that they consume say Dr Phil Edwards and Dr Ian Roberts from the [London School of Hygiene and Tropical Medicine](http://www.london.ac.uk/schools/hygiene-and-tropical-medicine). 'We are all becoming heavier and it is a global responsibility. Obesity is a key part of the big picture' said Edwards.

In a separate study published in the *American Journal of Preventive Medicine* researchers have highlighted the costs to business of the additional weight that Americans have been piling on in recent decades. It was calculated that the weight gain has resulted in airlines using an additional 350 million gallons of fuel annually, which at today's jet fuel prices equates to a cost of US\$600 million per year. And more fuel of course means more emissions.

The research follows findings last year in a Duke University Medical Centre study, which showed that obese workers filed double the amount of workers' compensation claims, had medical costs seven times those of normal-weight workers and took 13 times as many sick days.

Edwards and Roberts claim that 40 per cent of the world's population is obese (BMI around 30) and that several countries have already surpassed this level. They argue that because thinner people consume less and are likely to walk more rather than being so reliant on cars, the demands placed on agriculture and fuel by a thinner population are less.

The researchers concluded; 'Decreased car use would reduce greenhouse gas emissions and thus the need for biofuels, and increased physical activity levels would reduce injury risk and air pollution, improving population health'.

Source: *IHRSA* & [The Lancet](http://www.thelancet.com)

Garlic may reduce muscle damage

Recent research has linked allicin, the sulphur-based compound in garlic, to beneficial effects in exercise-induced muscle recovery.

The compound has been heralded as a useful antioxidant for a long time, but the new research carried out by scientists in China has indicated that it may also hold more sports and fitness-specific benefits.

Athletes took part in a controlled study, with participants allocated randomly to one of two groups, the first receiving allicin supplementation and the second unknowingly receiving a placebo for two weeks prior to, and two days after, a downhill treadmill run. This event was chosen due to its propensity for causing significant exercise-induced muscle damage.

Data gathered from the athletes, both before and after the downhill run, included antioxidant capacity, antioxidant enzyme levels, blood lactate, muscle breakdown markers and perceived muscle soreness.

Those in the allicin group were found to have significantly lower levels of muscle damage markers and indications of lower 'biochemical stress' levels. They were also found to have a higher concentration of antioxidants at rest and significantly lower levels of perceived muscle soreness than the placebo-supplemented control group.

Source: *European Journal of Applied Physiology*

Green tea, not cocoa, for snorers

Recent research in animals has found that compounds present in green tea may help to protect against neurological damage which is associated with the oxygen deprivation caused by obstructive sleep apnoea (OSA).

When green tea antioxidants were added to the water consumed by rats with a simulated version of the breathing disorder, researchers from the [University of Louisville](http://www.unl.edu) School of Medicine found that the creatures' brains appeared to be protected.

Characterised by chronic loud snoring and gasping during sleep, OSA is caused by soft tissue temporarily collapsing and blocking the airway. The condition has been linked to high blood pressure and it has been speculated that the interrupted flow of oxygen to the brain may cause problems with memory and learning.

Compounds in green tea, called catechin polyphenols, may help protect against oxygen deprivation by neutralising oxygen free radicals, which damage cells. Excess amounts of free radicals can lead to a state of 'oxidative stress', which, it is theorised, may contribute to the cognitive problems experienced by some individuals with OSA.

Lead study author, Dr David Gozal, and his colleagues discovered increased signs of oxidative stress in the brains of rats, which were exposed to bouts of oxygen deprivation over a two week period. These increases were not evident; however, in those rats which had been fed the green tea compound in their water.

Noting that the tea guzzling rats performed better in learning and memory tests, Gozal said that theoretically regular consumption of green tea may be of benefit to those with OSA, though he concluded that 'definitive proof that green tea would help will have to await a trial in human patients'.

Source: [American Journal of Respiratory and Critical Care Medicine](http://www.ajrccm.com)

Broccoli for immunity

A recent study from the US has again highlighted the health-giving properties of broccoli, this time attributing the glory to a compound which may help fight against oxidative damage to immune cells.

The research from the University of California suggests that age-related immune system decline may be stemmed with the assistance of sulforaphane, found in the vegetable.

Lead study researcher, Andre Nel, said, 'Our study shows that a chemical present in broccoli is capable of stimulating a wide range of antioxidant defence pathways and may be able to interfere with the age-related decline in immune function'.

Nel said that oxidative stress damage may affect the rate at which we age and how we will age; 'As we age, the ability of the immune system to fight disease and infections and protect against cancer wears down as a result of the impact of oxygen radicals on the immune system... This finding could be of major significance in preventing or reversing the effects of immune senescence in elderly human subjects'.

The researchers did concede that free radicals may form only part of the solution; however, with a more complex process and pro- and antioxidant interplay potentially being part of the process; 'Dietary antioxidants have been shown to have important effects on immune function, including improvement of contact hypersensitivity (CHS) and vaccination responses in human subjects. To this list we can now add broccoli and other cruciferous vegetables that are deserving of a human trial'.

Source: *Blackmores*

Weekend Warriors on the rise

Time-poor, middle-aged Aussies are going to extremes on the weekend to squeeze their weekly fitness routines into just one or two days in an apparent increase in 'Weekend Warrior' syndrome.

New research commissioned by Nestlé revealed that 70 per cent of Australians aged 35 or over feel they do not get enough exercise during the week and nearly a fifth of them try to squeeze their weekly fitness into Saturday and Sunday.

According to nutritionist, Karen Inge APD, this group is overcomplicating the desire for a healthy lifestyle. She suggests there is a much smarter way to keep fit and healthy, despite working long hours and having limited time; 'In my field, I regularly observe men and women over their mid-thirties who only exercise at the weekend and when they do go to the gym, they push themselves too far. Working out excessively once a week won't improve fitness levels. In fact, it is more likely to lead to injuries or dehydration due to the body being untrained. A smarter approach is to build strength and fitness by exercising three to four times per week for shorter intervals' she said.

As well as packing their exercise into the weekend, Weekend Warriors are struggling to maintain a balanced diet seven days a week. Nearly 40 per cent of those who undertake insufficient exercise during the week admit they try to eat a balanced diet Monday to Friday, only to overindulge at the weekend. 'One of the simplest ways to maintain a healthy diet on the weekend is to commence the day with a nutritious breakfast – the most important meal as it kick-starts the digestion process and provides energy to help us through the remainder of the day' said Inge.

Source: *www.uncletobys.com.au*

BOOK REVIEWS

Book title: Optimizing Strength Training: Designing Nonlinear Periodization Workouts

Authors: William J Kraemer and Steven J Fleck

Reviewed by: Peter Lawler

RRP: \$31.95

'We are very excited about *Optimizing Strength Training: Designing Nonlinear Periodization Workouts*, a revolutionary approach to periodization of resistance training'
(extract from the robust Preface, pg vii)

2007 has been a year of vigorous discussion about periodization in Australia. Late at night, long after the sun has set, coaches have attacked and defended current beliefs when they have assembled for the ATFCA Level IV Courses in Sydney and Runway Bay and at the National Congress conducted in Adelaide. The debate has been stimulating and fervent – and unresolved.

The timing of the arrival of this book, therefore, couldn't have been better. The authors, Kraemer and Fleck, are a famous team for Human Kinetics, co-authoring 'Designing Resistance Training Programs' and 'Strength Training for Young Athletes'.

So, what is all the excitement about?

Studies have shown that long term training might best be served by a flexible approach using a variety of workouts within the same training phase. Instead of the sustained drudgery of high volume and fixed intensity for endless weeks, especially in the preparatory phase of the training year, workouts must respond to individual circumstances – illness, examinations, wellness and work, to achieve the best results. This means constant change, thereby increasing the demand on coaches who set the programs.

Classical training theory has created linear periodization. Over a set period of time the workload is slowly lifted to create adaptation by coercing the body to respond to the ever increasing load. This text offers an alternative – non-linear periodization (also known as undulating periodization). The belief is that constant variation of workload creates a shock that the body must respond to. Changing the exercises, number of sets and repetitions and the intensity means micro-cycles may be as short as one week. Within that one week of three workouts, the athlete will be changing all training parameters each session to create the shock desired. Can the claims be substantiated? Good question. The authors cite two studies. The first compared traditional linear, a non varied multi-set model and a biweekly non-linear over a span of 12 weeks. In the latter, changes were made every two weeks rather than in every workout. All systems produced similar gains of 26 to 28 per cent in the back squat – so that test was a dud! The second test varied the non-linear session by session and was again compared to the traditional linear for another 12-week period. Both groups trained three times per week, always three sets only for each exercise. This time the testing produced astonishing results. The non-linear outperformed the classical in the bench press 29 per cent versus 14 per cent, and in the leg press 56 per cent versus 26 per cent. The authors conclude:

'Although comparison of results from two separate studies is tenuous, results of these two studies suggest session by session non linear programs cause greater strength gains than biweekly non linear programs' (pg 22).

The advantages of the non-linear system are espoused... There is the stimulus of variety that alleviates boredom; it allows an athlete to pick up after injury or stoppage; it is adaptable to diverse training situations and it aids recovery. Following experiments at the University of Connecticut with the basketball teams (both men and women), the concept has been expanded even further – the 'flexible non-linear periodization' system. This allows the coach and athlete to choose the workout on entry to the weight room. Basically, this means train as you feel on any day. This is radical stuff!

Thus far this review has focused on Chapter 1 only (which is superb) – seven chapters to go... I will be forthright and honest; it's liberating for one's soul. From here the book is padded more than an upholsterer's lounge. Chapter 2 presents the principles of resistance training – nothing unique here, but it fleshes out the text. Chapter 3 discusses the five acute

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program variables; exercise choice; exercise order; number of sets and repetitions; intensity; and rest on the Sabbath. Again, nothing much new here. Chapter 4 indicates an improved performance, with the authors again providing data for programming the non-linear system. You should read this chapter carefully. Excellence continues in the subsequent chapter entitled 'Workout Design', in which the co-authors provide sample programs for light, medium and heavy training days. Chapter 6 revisits the Upholsterer's Convention, padding and procrastinating under the guise of 'Assessment'.

'Nuff said! Move on!

This enigmatic text concludes with a solid chapter devoted to case studies. The chapter presents 50 situations. For all those coaches who have 'played' WHAT IF with Aussie teams before departing across the intrepid ocean for some championships, this chapter would sound familiar. Each Case Study describes a scenario; 'A volleyball player enters the gym for a plyometric session at 10am. He tells you he has only had 3 hours sleep as he is cramming for final exams that very afternoon. What would you do?' This scenario is repeated 49 times like a tap dripping on the impervious concrete. The options offered constitute common sense and flexibility. The subtlety of course is that non-linear periodization is all about flexibility and pragmatism. If you can tolerate the padding, this text is challenging. I hope coaches at ATFCA courses in 2008 gather in the long shadows to debate its evolution. But, is it a revolution?

HIGHLY RECOMMENDED