PROFESSOR TRIM'S WEIGHT LOSS FOR MEN

Doctors in Obesity Care-Sharing (DOCS)

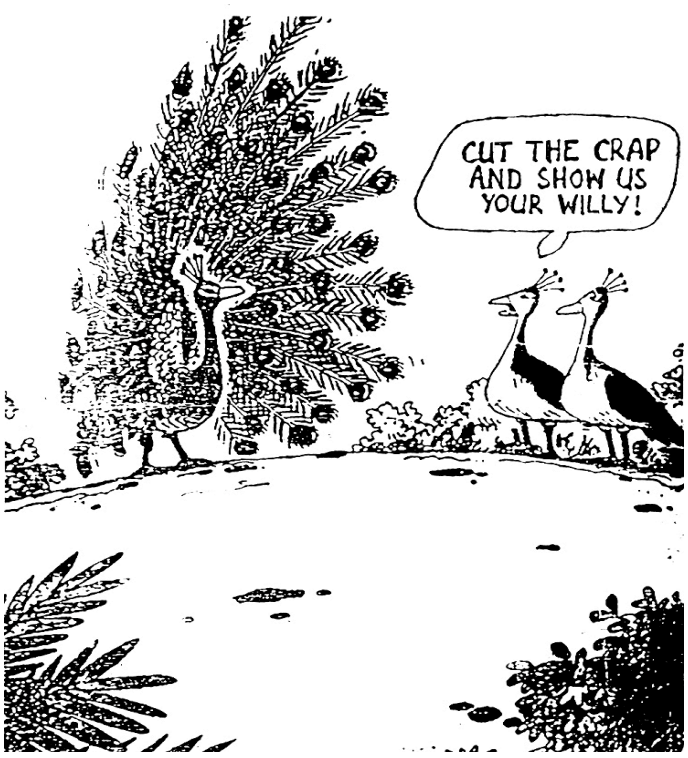
Bi- Monthly Journal Review

June 2005 (10 Items)

Clinical implications from this month's findings.

Key Finding for the month:

1. A low GI load in the diet can change metabolic factors that help weight loss
2. Are we in for the first decline in life expectancy ever because of obesity?
3. Fitness, irrespective of fatness seems to predict reduced heart disease risk.
4. Dairy protein could be best for muscle anabolism after resistance training
5. Obesity surgery works! – a meta analysis.
6. Pharmacological treatment doesn't work as well!– another meta analysis.
7. Enlarged waist + elevated Triglycerides = increased heart disease risk in women
8. A Mathematical model shows we could benefit from eating more protein.
9. Some herbal supplements for weight loss could be dangerous
10. Physical activity, in the absence of fitness, may be enough to prevent risk



JAMA. 2004 Nov 24;292(20):2482-90.

1. Effects of a low-glycemic load diet on resting energy expenditure and heart disease risk factors during weight loss.

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CONTEXT: Weight loss elicits physiological adaptations relating to energy intake and expenditure that antagonize ongoing weight loss. OBJECTIVE: To test whether dietary composition affects the physiological adaptations to weight loss, as assessed by resting energy expenditure. DESIGN, STUDY, AND PARTICIPANTS: A randomized parallel-design study of 39 overweight or obese young adults aged 18 to 40 years who received an energy-restricted diet, either low-glycemic load or low-fat. Participants were studied in the General Clinical Research Centers of the Brigham and Women's Hospital and the Children's Hospital, Boston, Mass, before and after 10% weight loss. The study was conducted from January 4, 2001, to May 6, 2003. MAIN OUTCOME MEASURES: Resting energy expenditure measured in the fasting state by indirect calorimetry, body composition by dual-energy x-ray absorptiometry, cardiovascular disease risk factors, and self-reported hunger. RESULTS: Resting energy expenditure decreased less with the low-glycemic load diet than with the low-fat diet, expressed in absolute terms (mean [SE], 96 [24] vs 176 [27] kcal/d; P = .04) or as a proportion (5.9% [1.5%] vs 10.6% [1.7%]; P = .05). Participants receiving the low-glycemic load diet reported less hunger than those receiving the low-fat diet (P = .04). Insulin resistance (P = .01), serum triglycerides (P = .01), C-reactive protein (P = .03), and blood pressure (P = .07 for both systolic and diastolic) improved more with the low-glycemic load diet. Changes in body composition (fat and lean mass) in both groups were very similar (P = .85 and P = .45, respectively). CONCLUSIONS: Changes in dietary composition within prevailing norms can affect physiological adaptations that defend body weight. Reduction in glycemic load may aid in the prevention or treatment of obesity, cardiovascular disease, and diabetes mellitus.

Comment: This could provide an explanation for why low GI diets can have weight loss benefits. At the moment there seems no disadvantage in recommending this, although combined with low fat (and increased protein) would seem to be a better option.

N Engl J Med. 2005 Mar 17;352(11):1138-45.

2. A potential decline in life expectancy in the United States in the 21st century.

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Forecasts of life expectancy are an important component of public policy that influence age-based entitlement programs such as Social Security and Medicare. Although the Social Security Administration recently raised its estimates of how long Americans are going to live in the 21st century, current trends in obesity in the United States suggest that these estimates may not be accurate. From our analysis of the effect of obesity on longevity, we conclude that the steady rise in life expectancy during the past two centuries may soon come to an end.

Comment: It's happening Maude! It's happening!

Eur J Cardiovasc Prev Rehabil. 2005 Apr;12(2):126-131.

3. Associations between estimated aerobic fitness and cardiovascular risk factors in adults with different levels of abdominal obesity.

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BACKGROUND: We investigated the association between estimated aerobic fitness and cardiovascular risk factors, and how the association is affected by abdominal obesity. DESIGN: Cross-sectional population study. METHODS: Participants comprised 3820 adults aged 25 to 64 years from the FINRISK 2002 Study in Finland. Aerobic fitness was estimated using a non-exercise test. Waist-to-hip ratio (WHR), blood pressure, total cholesterol, high-density lipoprotein cholesterol (HDL-C), triglycerides, HDL-C to total cholesterol ratio, and gamma-glutamyl transferase (GGT) levels were measured by standardized methods. RESULTS: After controlling for age, smoking and alcohol consumption, aerobic fitness was inversely associated with systolic (P=0.027) and diastolic (P<0.001) blood pressure, total cholesterol (P=0.009), triglycerides (P=0.001), and GGT (P<0.001), and directly associated with HDL-C (P<0.001) and HDL-C to total cholesterol ratio (P<0.001) in men. In women, inverse associations were found for diastolic blood pressure (P=0.027) and triglycerides (P<0.001), and direct association for HDL-C (P<0.001) and HDL-C to total cholesterol ratio (P<0.001). Waist-to-hip ratio was independently associated with a better risk factor profile in both sexes. Interactions were found between fitness and WHR in relation to total cholesterol (P=0.001), HDL-C to total cholesterol ratio (P=0.005), triglycerides (P=0.001), and systolic (P=0.009) and diastolic (P<0.001) blood pressure among men only. CONCLUSIONS: Our data suggest that good estimated aerobic fitness is associated with a better cardiovascular risk factor profile, regardless of the level of abdominal obesity in Finnish men and women. Men in the highest WHR third seem to have more benefit of aerobic fitness on their cardiovascular risk levels than men with lower WHR.

Comment: This is now occurring enough for us to draw a line under research in this area. Implication: Get 'em fit and don't worry so much about the fat. If it comes off, it's a bonus!

J Am Coll Nutr. 2005 Apr;24(2):134S-9S.

4. Dietary protein to support anabolism with resistance exercise in young men.

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Resistance exercise is fundamentally anabolic and as such stimulates the process of skeletal muscle protein synthesis (MPS) in an absolute sense and relative to skeletal muscle protein breakdown (MPB). However, the net effect of resistance exercise is to shift net protein balance (NPB = MPS - MPB) to a more positive value; however, in the

absence of feeding NPB remains negative. Feeding stimulates MPS to an extent where NPB becomes positive, for a transient time. When combined, resistance exercise and feeding synergistically interact to result in NPB being greater than with feeding alone. This feeding- and exercise-induced stimulation of NPB is what, albeit slowly, results in muscle hypertrophy. With this rudimentary knowledge we are now at the point where we can manipulate variables within the system to see what impact these interventions have on the processes of MPS, MPB, and NPB and ultimately and perhaps most importantly, muscle hypertrophy and strength. We used established models of skeletal muscle amino acid turnover to examine how protein source (milk versus soy) acutely affects the processes of MPS and MPB after resistance exercise. Our findings revealed that even when balanced quantities of total protein and energy are consumed that milk proteins are more effective in stimulating amino acid uptake and net protein deposition in skeletal muscle after resistance exercise than are hydrolyzed soy proteins. Importantly, the finding of increased amino acid uptake would be independent of the differences in amino acid composition of the two proteins. We propose that the improved net protein deposition with milk protein consumption is also not due to differences in amino acid composition, but is due to a different pattern of amino acid delivery associated with milk versus hydrolyzed soy proteins. If our acute findings are accurate then we hypothesized that chronically the greater net protein deposition associated with milk protein consumption post-resistance exercise would eventually lead to greater net protein accretion (i.e., muscle fiber hypertrophy), over a longer time period. In young men completing 12 weeks of resistance training (5d/wk) we observed a tendency ($P = 0.11$) for greater gains in whole body lean mass and whole as greater muscle fiber hypertrophy with consumption of milk. While strength gains were not different between the soy and milk-supplemented groups we would argue that the true significance of a greater increase in lean mass that we observed with milk consumption may be more important in groups of persons with lower initial lean mass and strength such as the elderly.

Comment: I hates to admit it, but maybe those bodybuilders with the low foreheads I've tried to educate over the year have been right all along. The difference in type of protein however is of crucial relevance and may point to the issue of 'fast' vs 'slow' protein in weight loss. I'm sure we'll hear a lot more about this in the near future.

Ann Intern Med. 2005 Apr 5;142(7):547-59.

5. Meta-analysis: surgical treatment of obesity.

Maggard MA, Shugarman LR, Suttorp M, Maglione M, Sugarman HJ, Livingston EH, Nguyen NT, Li Z, Mojica WA, Hilton L, Rhodes S, Morton SC, Shekelle PG.
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BACKGROUND: Controversy exists regarding the effectiveness of surgery for weight loss and the resulting improvement in health-related outcomes. PURPOSE: To perform a meta-analysis of effectiveness and adverse events associated with surgical treatment of obesity. DATA SOURCES: MEDLINE, EMBASE, Cochrane Controlled Trials Register, and systematic reviews. STUDY SELECTION: Randomized, controlled trials; observational studies; and case series reporting on surgical treatment of obesity. DATA EXTRACTION: Information about study design, procedure, population, comorbid conditions, and adverse events. DATA SYNTHESIS: The authors assessed 147 studies. Of these, 89 contributed to the weight loss analysis, 134 contributed to the mortality analysis, and 128 contributed to the complications analysis. The authors identified 1 large, matched cohort analysis that reported greater weight loss with surgery than with medical treatment in individuals with an average body mass index (BMI) of 40 kg/m2 or

greater. Surgery resulted in a weight loss of 20 to 30 kg, which was maintained for up to 10 years and was accompanied by improvements in some comorbid conditions. For BMIs of 35 to 39 kg/m2, data from case series strongly support superiority of surgery but cannot be considered conclusive. Gastric bypass procedures result in more weight loss than gastroplasty. Bariatric procedures in current use (gastric bypass, laparoscopic adjustable gastric band, vertical banded gastroplasty, and biliopancreatic diversion and switch) have been performed with an overall mortality rate of less than 1%. Adverse events occur in about 20% of cases. A laparoscopic approach results in fewer wound complications than an open approach. LIMITATIONS: Only a few controlled trials were available for analysis. Heterogeneity was seen among studies, and publication bias is possible. CONCLUSIONS: Surgery is more effective than nonsurgical treatment for weight loss and control of some comorbid conditions in patients with a BMI of 40 kg/m2 or greater. More data are needed to determine the efficacy of surgery relative to nonsurgical therapy for less severely obese people. Procedures differ in efficacy and incidence of complications.

Comment: It's about time we recognized this. Because of the cost and fear of surgery by patients however, the threat of surgery can be used as a 'stick' to try to encourage better lifestyle changes before resorting to the knife.

Ann Intern Med. 2005 Apr 5;142(7):532-46.

6. Meta-analysis: pharmacologic treatment of obesity.

Li Z, Maglione M, Tu W, Mojica W, Arterburn D, Shugarman LR, Hilton L, Suttorp M, Solomon V, Shekelle PG, Morton SC.
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BACKGROUND: In response to the increase in obesity, pharmacologic treatments for weight loss have become more numerous and more commonly used. PURPOSE: To assess the efficacy and safety of weight loss medications approved by the U.S. Food and Drug Administration and other medications that have been used for weight loss. DATA SOURCES: Electronic databases, experts in the field, and unpublished information. STUDY SELECTION: Up-to-date meta-analyses of sibutramine, phentermine, and diethylpropion were identified. The authors assessed in detail 50 studies of orlistat, 13 studies of fluoxetine, 5 studies of bupropion, 9 studies of topiramate, and 1 study each of sertraline and zonisamide. Meta-analysis was performed for all medications except sertraline, zonisamide, and fluoxetine, which are summarized narratively. DATA EXTRACTION: The authors abstracted information about study design, intervention, co-interventions, population, outcomes, and methodologic quality, as well as weight loss and adverse events from controlled trials of medication. DATA SYNTHESIS: All pooled weight loss values are reported relative to placebo. A meta-analysis of sibutramine reported a mean difference in weight loss of 4.45 kg (95% CI, 3.62 to 5.29 kg) at 12 months. In the meta-analysis of orlistat, the estimate of the mean weight loss for orlistat-treated patients was 2.89 kg (CI, 2.27 to 3.51 kg) at 12 months. A recent meta-analysis of phentermine and diethylpropion reported pooled mean differences in weight loss at 6 months of 3.6 kg (CI, 0.6 to 6.0 kg) for phentermine-treated patients and 3.0 kg (CI, -1.6 to 11.5 kg) for diethylpropion-treated patients. Weight loss in fluoxetine studies ranged from 14.5 kg of weight lost to 0.4 kg of weight gained at 12 or more months. For bupropion, 2.77 kg (CI, 1.1 to 4.5 kg) of weight was lost at 6 to 12 months. Weight loss due to topiramate at 6 months was 6.5% (CI, 4.8% to 8.3%) of pretreatment weight. With one exception, long-term studies of health outcomes were lacking. Significant side effects that varied by drug were reported. LIMITATIONS: Publication bias may exist despite a

comprehensive search and despite the lack of statistical evidence for the existence of bias. Evidence of heterogeneity was observed for all meta-analyses. CONCLUSIONS: Sibutramine, orlistat, phentermine, probably diethylpropion, bupropion, probably fluoxetine, and topiramate promote modest weight loss when given along with recommendations for diet. Sibutramine and orlistat are the 2 most-studied drugs.

Comment: Unlike the above (surgery), this is nowhere near as clear-cut (no pun intended) as a treatment method. Every new drug bursts onto the scene with amazing acclaim (mainly by the pharma company producing it), but then quickly fizzles by the way-side. Can we overcome this need to *have to have* a drug solution?

Circulation. 2005 Apr 19;111(15):1883-90.

7. Enlarged waist combined with elevated triglycerides is a strong predictor of accelerated atherogenesis and related cardiovascular mortality in postmenopausal women.

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BACKGROUND: Upward trends of obesity urge more effective identification of those at cardiovascular risk. A simple dichotomous indicator, enlarged waist (> or =88 cm) combined with elevated triglycerides (> or =1.45 mmol/L) (EWET), was shown to offer advantages in identifying individuals with atherogenic "lipid overaccumulation" compared with other indicators, including the metabolic syndrome defined by the National Cholesterol Education Program (MS-NCEP). Whether EWET offers superior disease and event prediction in postmenopausal women, however, remains unknown. METHODS AND RESULTS: A community-based sample of 557 women (48 to 76 years of age) were followed up for 8.5+/-0.3 years to assess the utility of EWET and MS-NCEP in estimating the risk of all-cause and cardiovascular mortality and the annual progression rate of aortic calcification. At baseline, 15.8% of women had EWET and 17.6% had MS-NCEP. All-cause mortality and cardiovascular mortality were increased in carriers of the dichotomous indicators (P<0.001). After adjustment for age, smoking, and LDL cholesterol, presence of EWET was associated with a 4.7-fold (95% CI, 2.2 to 9.8; P<0.001) increased risk and presence of MS-NCEP was associated with a 3.2-fold (95% CI, 1.5 to 6.5; P<0.001) increased risk for fatal cardiovascular events. Exclusion of women with prevalent diabetes did not change these trends; respective hazard ratios were 4.2 (95% CI, 1.9 to 9.3; P<0.001) and 2.5 (95% CI, 1.1 to 5.5; P<0.05). Among those who were discordant for EWET and MS-NCEP at baseline, those who had EWET alone (n=21) had a higher annual progression rate of aortic calcification compared with those who had MS-NCEP alone (n=31; P<0.05). CONCLUSIONS: The combined presence of EWET may be the best indicator of cardiovascular risk in postmenopausal women. Other components of the MS-NCEP add little medical value to screening in general practices.

Comment: This is not the first time this has been reported (and not only in post menopausal women). It supports the notion that a waist size above that recommended and a Tg>2 (1.45 is a bit severe) can be used as an indicator of potential heart probs – even in the absence of other measures (eg. cholesterol etc).

Obes Rev. 2005 May;6(2):133-142

8. Obesity: the protein leverage hypothesis.

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Summary The obesity epidemic is among the greatest public health challenges facing the modern world. Regarding dietary causes, most emphasis has been on changing patterns of fat and carbohydrate consumption. In contrast, the role of protein has largely been ignored, because (i) it typically comprises only approximately 15% of dietary energy, and (ii) protein intake has remained near constant within and across populations throughout the development of the obesity epidemic. We show that, paradoxically, these are precisely the two conditions that potentially provide protein with the leverage both to drive the obesity epidemic through its effects on food intake, and perhaps to assuage it. We formalize this hypothesis in a mathematical model. Some supporting epidemiological, experimental and animal data are presented, and predictions are made for future testing.

Comment: If you like a bit of statistical epidemiology, this is well worth a read. If not, here's the bottom line: Increase the proportion of protein in the diet for weight loss (but then you've heard that before here, haven't you?).

Obes Rev. 2005 May;6(2):93-111.

9. Adverse events of herbal food supplements for body weight reduction: systematic review*.

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Summary: Herbal weight-loss supplements are marketed with claims of effectiveness. Our earlier systematic review identified data from double-blind, randomized controlled trials for a number of herbal supplements. The aim of this systematic review was to assess all clinical evidence of adverse events of herbal food supplements for body weight reduction for which effectiveness data from rigorous clinical trials exist. We assessed Ephedra sinica, Garcinia cambogia, Paullinia cupana, guar gum, Plantago psyllium, Ilex paraguariensis and Pausinystalia yohimbe. Literature searches were conducted on Medline, Embase, Amed and The Cochrane Library. Data were also requested from the spontaneous reporting scheme of the World Health Organization. We hand-searched relevant medical journals and our own files. There were no restrictions regarding the language of publication. The results show that adverse events including hepatic injury and death have been reported with the use of some herbal food supplements. For herbal ephedra and ephedrine-containing food supplements an increased risk of psychiatric, autonomic or gastrointestinal adverse events and heart palpitations has been reported. In conclusion, adverse events are reported for a number of herbal food supplements, which are used for reducing body weight. Although the quality of the data does not justify definitive attribution of causality in most cases, the reported risks are sufficient to shift the risk-benefit balance against the use of most of the reviewed herbal weight-loss supplements. Exceptions are Garcinia cambogia and yerba mate, which merit further investigation.

Comment: These guys know what they're talking about, being the experts in alternative-type treatments. That the supplements don't work is one thing. That they could cause problems makes their unrestricted use a bit more serious.

Diabetes Care. 2005 May;28(5):1195-200.

10. Physical activity energy expenditure predicts progression toward the metabolic syndrome independently of aerobic fitness in middle-aged healthy Caucasians: the medical research council ely study.

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OBJECTIVE: To examine over a period of 5.6 years the prospective associations between physical activity energy expenditure (PAEE), aerobic fitness (Vo(2max)), obesity, and the progression toward the metabolic syndrome in a population-based cohort of middle-aged men and women (n = 605) who were free of the metabolic syndrome at baseline. RESEARCH DESIGN AND METHODS: PAEE was measured objectively by individually calibrated heart rate against energy expenditure. Vo(2max) was predicted from a submaximal exercise stress test. Fat mass and fat-free mass were assessed by bio-impedance. A metabolic syndrome score was computed by summing the standardized values for obesity, hypertension, hyperglycemia, insulin resistance, hypertriglyceridemia, and the inverse level of HDL cholesterol and expressed as a continuously distributed outcome. Generalized linear models were used to examine the independent prospective associations between PAEE and Vo(2max) and the metabolic syndrome score after adjusting for sex, baseline age, smoking, socioeconomic status, follow-up time, and baseline phenotypes. RESULTS: PAEE predicted progression toward the metabolic syndrome, independent of baseline metabolic syndrome, body fat, Vo(2max), and other confounding factors (standardized beta = -0.00085, P = 0.046). This association was stronger when excluding the adiposity component from the metabolic syndrome (standardized beta = -0.0011, P = 0.035). Vo(2max) was not an independent predictor of the metabolic syndrome after adjusting for physical activity (standardized beta = 0.00011, P = 0.93). CONCLUSIONS: PAEE predicts progression toward the metabolic syndrome independent of aerobic fitness, obesity, and other confounding factors. This finding underscores the importance of physical activity for metabolic disease prevention even when an improvement in aerobic fitness is absent.

Comment: If correct, this throws a bit of a cat amongst the pigeons. We've thought that increased activity worked through increasing fitness. If this is not the case it implies something else is happening internally without changes in fitness, which may again be good news.