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Dietary Conjugated Linoleic Acid: An Old Fatty Acid with Potential New Applications

by Martha A. Belury, PhD, RD and Celeste G. Koster, MA

Conjugated linoleic acid (CLA) is a group of polyunsaturated fatty acids found in ruminant food products (beef, lamb, and dairy products) that exist as cis and trans combinations of double bond isomers. The CLA group of fatty acids contains two double bonds where the double bonds are only two carbons apart unlike most other polyunsaturated fatty acids, which exist with three carbons between the two double bonds.¹ The predominant geometric isomer in ruminant foods is the cis9trans11-CLA isomer and therefore has been called "rumenic acid."¹

In addition to being found in ruminant foods, CLA is available as a dietary supplement. In the supplement form, the CLA currently marketed is usually approximately 80% to 90% pure and the isomeric composition is approximately 42% cis9trans11 / trans9cis11-CLA, 43% trans10cis12-CLA, with other isomers (eg, cis9cis11-CLA, cis10trans12-CLA, trans9trans11 / trans10trans12-CLA, etc) comprising minor amounts.

For the most part, animal and human studies have evaluated the synthetic mixture of isomers (predominantly c9t11-CLA and t10c12-CLA). In these studies, numerous physiologic properties have been attributed to CLA, including action as an anti-adipogenic,

antidiabetogenic, anticarcinogenic, and anti-atherosclerotic agent.¹

CLA has also been demonstrated to modulate lipid and macronutrient metabolism and fatty acid biochemistry, most likely at the level of modulating transcription and post-transcriptional events regulating enzyme levels and activity. This review focuses on the potential ability of CLA to modulate body composition or alter metabolism in a way that could potentially influence wellness or athletic performance.

Body Fat Reduction in Animals

Perhaps the most studied area of CLA involves its role in modulating body composition, especially by reducing accumulation of adipose tissue in experimental animals. In mice, rats, pigs, and humans, dietary CLA reduces adipose tissue depots.¹

The adipose-mass lowering effect of CLA in growing mice was demonstrated when post-weanling mice (6-weeks-old) were fed a diet containing 1% CLA for 28 to 32 days.² Total adipose tissue mass was reduced by more than 50% compared with mice fed a control diet. Further work demonstrated that dietary CLA reduction of adiposity could be sustained in mice even after CLA was removed from the diet.³ Subsequent studies in non-obese mice showed that some depots of fat mass (especially retroperitoneal and epididymal

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white adipose tissue masses^{4,5} and brown adipose tissue⁵) might be more sensitive to CLA-mediated reductions.

In contrast to findings in mice, strains of rats respond variably to CLA. Some rats show no significant effect of CLA on body weight and adipose mass, while others are very sensitive. In addition, there is an isomer-specific effect of CLA on adiposity: t10c12-CLA was much more effective in lowering adipose tissue mass than the c9t11-CLA isomer in mice.⁶

The ability of CLA to reduce adipose tissue mass occurs regardless of food intake or fat level (6.5%-20%) in mice so that feed efficiency may be improved.^{2,4,7} In fact, in both rats⁸ and humans (MA Belury, unpublished data), CLA reduces leptin, a hormone known to regulate feed intake.

Variable Effects on Body Fat in Humans

In adult humans, the ability of CLA to lower adipose tissue mass is demonstrated in some⁹⁻¹¹ but not all¹²⁻¹³ studies. For example, when overweight or obese human subjects were supplemented with CLA (3.4–6 g/day) for 12 weeks, a significant reduction of fat mass was observed.⁶ However, in people consuming 3 g/day for 12 weeks, no benefit of CLA supplementation was observed in body weight or adiposity reduction.¹³

More recent studies have demonstrated that CLA supplementation reduces body weight, leptin, and body adiposity in humans^{10,11} (MA Belury, unpublished data). It is likely that dose, duration (short- vs long-term) and the isomeric composition of CLA each impact the ability of CLA to affect obesity in humans. In addition, the ethnicity-specific, age-specific, and sex-specific effects of various isomers of CLA on adipose tissue accumulation, either in obese humans or those seeking to prevent adipose gain, are yet to be determined.

Other Metabolism-Related Effects

There are many risk factors of type 2 diabetes, including impaired glucose tolerance, certain ethnic groups, advanced age, male gender, and genetic predisposition. Central to all risk factors of this disease is obesity.¹⁴ When male Zucker diabetic fatty (ZDF) rats were fed semipurified diets containing no CLA, 1.5% CLA, or troglitazone 0.02% (an antidiabetic thiazolidinedione drug) for 2 weeks, the rats fed CLA or thiazolidinedione diet had significantly reduced ($p < .05$) fasting glucose, insulinemia,¹⁵ triglyceridemia, free fatty acid levels, and leptinemia¹⁰ compared with rats fed the control diet.

While CLA reduces fasting insulin in diabetic animals, CLA increases fasting serum insulin in nondiabetic animals and humans.¹⁶ Because fasting insulin may be used as a surrogate marker for insulin resistance, these data suggest CLA reduces insulin sensitivity under a normoglycemic state. In agreement, after long-term (8 months) feeding of a CLA-diet, an induction of insulin resistance was observed in C57Bl/6J male mice.⁴ CLA-induced insulin resistance was associated with lipodystrophy.

The long-term impact and significance of CLA in altering insulin sensitivity or inducing lipodystrophy-associated insulin resistance in people who do not have diabetes is unknown.

CLA as an Ergogenic Aid

Because of favorable effects of CLA on adiposity and lean mass in experimental animals, CLA has received some attention as an ergogenic aid for resistance-trained athletes and bodybuilders. Along with reducing adiposity in several animal models of obesity, CLA may have positive effects on muscle mass.¹⁷

A relationship between CLA supplementation and muscle size and strength was found in one study but not in others.¹⁷ The mixed findings



FROM THE EDITOR

It's All About the Controversy

I recently came across a quote on a website that was credited to Siddhartha Buddha. The quote read, "In a controversy the instant we feel anger we have already ceased striving for the truth, and have begun striving for ourselves."

I've noticed that sometimes dietitians become defensive and put up walls when a controversial nutrition issue is being discussed. When we blindly defend our opinions instead of reviewing the science to learn our current state of "the truth," progress in expanding nutrition knowledge is greatly impeded. This issue of SCAN's PULSE discusses some topics that are controversial to many of us and are much in need of more research to heighten our level of "the truth" surrounding them.

Martha Belury has contributed an article about a group of trans fatty acids (CLA) that may actually be an asset to

our wellness. Angie Makris, Gary Foster, and Jeff Volek have written an article summarizing the latest research on very low-carbohydrate diets for weight loss and cardiovascular disease risk. An article on hydration by Kristin Reimers and Liz Marr may test your confidence in the old adage that we need 8 glasses of crystal clear water per day. Perhaps less controversial, Carolyn Costin's article on the "eating disordered self" may help you to think of disordered eating as more of a symptom than a disease.

Controversies in nutrition abound. Is there a controversial issue you'd like to suggest for inclusion in PULSE? If so, please contact one of our editors to find out if there's a way you can help us all find the truth.

Mark Kern, PhD, RD
Editor-in-Chief

may be due to differences in muscle mass measurement (skin fold vs DEXA), doses of CLA used (7.2g/day CLA in the former study, 6g CLA/day in the latter), or condition of athletes prior to supplementation.

Modulating Energy Utilization

The inverse association of CLA with body mass and adiposity prompted work to elucidate the role of CLA in modulating energy intake and expenditure. Male AKR/J mice supplemented with CLA had reduced energy intake and growth rate.³ The group given a 1.2% CLA mixture in a high-fat diet and 1% CLA mixture in a low-fat diet also had an increased metabolic rate and a decreased night-time respiratory quotient as compared with controls fed without CLA. However, not all studies have shown such an effect in mice,¹⁸ hamsters,¹⁹ or humans.¹³ Once again, dose, duration, and metabolic status of the subject were widely variable between studies and may explain the inconsistent findings.

Summary

The idea that CLA offers some

benefits that have not traditionally been associated with dietary fat quality is intriguing. At the same time, findings that CLA has different effects in various species of animals and in various metabolic conditions (nondiabetic vs diabetic) warrants the need for further investigation on the safety and efficacy for weight and body fat reduction and influence for strengthening people for improved athletic performance. ■

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FROM THE CHAIR

Reflections and Thanks

Ten years ago at the SCAN Symposium in Atlanta, I received the SCAN Achievement Award. Marty Yadrick, as SCAN Chair at that time (just one of his many volunteer contributions to SCAN and ADA), presented the award. I am thrilled and privileged to return the honor and present the SCAN Achievement Award to Marty at this year's SCAN Symposium at the Broadmoor in Colorado Springs.

Marty is a volunteer at heart. He has served on the ADA Board of Directors and the House of Delegates (HOD), including a term as HOD Director. Marty has also been the Professional Issue Delegate/DPG Liaison for SCAN in addition to serving on and chairing numerous task forces and committees within ADA's Board of Directors and HOD. The SCAN Achievement Award could not go to a more deserving individual.

Please join me at the SCAN Symposium "Cardiovascular Disease and Obesity: Optimizing Lifestyle Therapies" on April 16-18 at the world-famous, five-star Broadmoor resort. In addition to obtaining cutting-edge information to sharpen your clinical skills, you'll have ample opportunities for physical and spiritual renewal at the foot of Pike's Peak.

As my term as SCAN Chair draws to a close, I would like to thank our tremendous Executive Committee, our Executive Director Julie Bowerman, and ADA Liaison Diane Barrera for all of their efforts to put SCAN back on good fiscal footing and improve SCAN's member services. SCAN will continue to strive for and achieve excellence under the superb leadership of Michele Macedonio.

Thank you all for providing me with the opportunity to give something back to SCAN. After 21 years of membership, I feel that I am still in your debt. As I stated in my first letter, it takes SCAN members to give life to SCAN, just as it takes a village to raise a child. Please give the gift of yourself to continue SCAN's excellence.

In the words of Ellen Browning Scripps (1914), "It seems to me a little thing to give money, even for a great purpose. But to give of ourselves—the work of our hands, the courage of our brains, the sympathy of our hearts, the riches of our experiences in joy and in sorrow, the beauty of our lives, in all good fellowship—ah, this is grand!"

*Miles of Smiles,
Ellen*

Low Carbohydrate Diets: Effects on Cardiovascular Disease Risk Factors and Weight Loss

Part I by Angie Makris, PhD, RD, and Gary D. Foster, PhD

Part II by Jeff S. Volek, PhD, RD

Most current public health messages suggest following low-calorie, low-fat diet regimens for weight loss and management. Given the high prevalence of obesity and apparent ineffectiveness of this message, public interest in alternative dietary approaches to weight management has intensified. Among the most popular alternatives are low-carbohydrate, high-protein, high-fat diets. Various *New York Times* bestsellers, such as *Atkins New Diet Revolution* and *South Beach Diet*, each provide a different interpretation of optimal low-carbohydrate eating and underscore the popularity of diets that reduce carbohydrate intake.

In this two-part article, the authors summarize recent clinical trials examining (1) the effects of low-carbohydrate diets on weight loss and (2) the effects of such diets on cardiovascular disease (CVD) risk factors in normal-weight adults. The research reviewed is limited to very low-carbohydrate diet studies; studies examining the effects of more typical and modest carbohydrate restrictions are not reviewed.

Part I: Low-Carb Diets in Obesity Treatment

Clinicians are often confronted with questions about the safety and efficacy of low-carbohydrate diets in the treatment of obesity. Much attention has been focused on the high fat and protein contents of the diet. However, low-carbohydrate approaches also encourage consumption of controlled amounts of nutrient-dense carbohydrate-containing foods (low-glycemic index vegetables, fruits, and whole grain products) and eliminate intake of carbohydrate-containing foods based

on refined carbohydrate (white bread, rice, pasta, cookies, and chips). Although consumption of foods that



“Participants following a low-carbohydrate diet lost significantly more weight than those following a low-fat diet during the first 6 months of treatment.¹⁻³ However, differences in weight did not persist at 1 year.”¹

do not contain carbohydrate (meats, poultry, fish, butter, and oil) is not restricted, the emphasis is on moderation and quality rather than quantity.

Three randomized studies compared the short-term (≤ 12 months) effects of a low-carbohydrate diet and a calorie-controlled, low-fat diet (55% carbohydrate, 15% protein, and 30% fat) on weight, body composition, and cardiovascular risk factors in obese (body mass index [BMI] ≥ 30) adults. Two of these studies evaluated effects in healthy adults^{1,2} and one examined effects in adults primarily with diabetes or metabolic syndrome.³ Participant characteristics and findings of these studies are summarized in Table 1.

Methodology of studies. In a 1-year study, Foster et al¹ evaluated the effects of the Atkins approach (20 g carbohydrate/day primarily from low-glycemic vegetables and cheese for 2 weeks, followed by gradual increase to approximately 40-60 g/day) in a self-help setting. With the

exception of three visits with a registered dietitian, participants followed the Atkins approach on their own; they were provided with the Atkins book and asked to follow the diet as described in the book.

In another study, Brehm et al² examined the same dietary prescription in the context of biweekly dietitian-lead individual and group treatment, which occurred during the first 3 months of treatment.

In a third study, Samaha et al³ provided group treatment weekly for the first 4 weeks and then monthly for the remainder of the trial. The low-carbohydrate approach that participants followed differed from the Atkins regimen in that it prescribed a higher level of carbohydrate intake (30 g carbohydrate/day) and encouraged fruit consumption at the onset of the diet.

Thus, while all three studies prescribed considerably less carbohydrate than a conventional approach, dietary instruction and amount of clinician contact differed slightly between these studies.

Efficacy results. Across all three studies, participants following a low-carbohydrate diet lost significantly more weight than those following a low-fat diet during the first 6 months of treatment.¹⁻³ However, differences in weight did not persist at 1 year¹ (Table 1, page 7). Differences in weight do not appear to be due to differences in level of ketosis.^{1,2}

The data from these studies suggest that although participants in the low-carbohydrate group were not instructed to limit their energy intake as was the conventional group, the low-carbohydrate group consumed fewer calories. Differences in the types of food consumed, resulting in a very different macronutrient distribution (ie, higher protein and fat content), may have contributed to a spontaneous reduction in energy intake in the low-carbohydrate

group. There is evidence to support that protein is more efficacious in suppressing appetite than carbohydrate or fat.^{4,6}

Furthermore, findings from previous studies suggest that high-protein and low-glycemic (GI) diets composed of foods high in protein and fiber (ie, red meats, poultry, fish, cheese, and certain vegetables) are more satiating and may make adherence to a weight-loss program easier.^{7,8} It has also been suggested that the structure of the low-carbohydrate diet, which defines clear boundaries about what is allowed, may play an important role in decreasing the amount and frequency of food intake.

Safety results. A principle concern about low-carbohydrate approaches is that the high-fat content of the diet

approach for short-term weight loss and just as effective up to 1 year. Moreover, these diets appear to be less harmful than anticipated in terms of traditional measures of cardiovascular disease risk. Results should be interpreted with caution given the small sample sizes, limited study population, and short duration of treatment.

These preliminary data do not suggest any modification of the current clinical recommendations for a low-calorie, low-fat diet. Such a diet has been shown to reduce the risk of type 2 diabetes by nearly 60%.⁹

These data do suggest, however, that low-carbohydrate diets should be studied as a potentially viable alternative for obese patients. Such studies should assess the effects of the diet on other clinical end points

(ie, renal function, bone health, exercise endurance, cognitive function) and distinguish between the impact of weight loss and dietary

factors on metabolic outcomes and cardiovascular risk.

Part II:

Low-Carb Diets and CVD Risk

Low-carbohydrate diets are popular among the general population primarily for weight loss. Although there is no universal definition for low-carbohydrate diets, they generally comprise <50 g carbohydrate per day or <10% of energy from carbohydrate¹⁰ and consist of the following macronutrient distribution: <10% carbohydrate, 25%-35% protein, and 55%-65% fat.

In addition to the review above (Part I), other recent reviews of studies documenting the effects of very low-carbohydrate diets on weight loss have been published.^{10,11} Because of the high-fat and high-cholesterol nature of these diets, there has been an understandable concern

regarding potential adverse effects on cardiovascular disease risk.

Although findings from recent clinical trials show that standard lipid markers are not adversely affected by low-carbohydrate diets, these responses cannot be separated from the effects of weight loss because the diets in these trials were hypoenergetic. In an attempt to isolate the effects of the diet without the confounding effects of weight loss, we studied the effects of low-carbohydrate diets prescribed at isoenergetic levels on risk factors for cardiovascular disease, as described below.¹²⁻¹⁵

Study 1. In the first study we performed, 10 normal-weight, normolipidemic men consumed an isoenergetic low-carbohydrate diet (7% of energy from carbohydrate) that was also designed to be low in saturated fat and rich in monounsaturated fat and omega-3 fatty acids for 8 weeks.¹² The changes in TC, LDL-C, HDL-C, and triacylglycerols (TAG) were 2%, 10%, 10%, and -55%, respectively. The postprandial TAG response to a fat-rich meal was reduced by 48% and the TC/HDL-C ratio decreased by 8%. Since we manipulated the types of fat and supplemented the diet with omega-3 fatty acids, it is unknown to what degrees the carbohydrate content versus the quality of dietary fats contributed to the observed responses.

Study 2. In our second study, we had 12 normal-weight, normolipidemic men consume an isoenergetic low-carbohydrate diet (8% of energy from carbohydrate) that was naturally rich in saturated fat and not supplemented with omega-3 fatty acids for 6 weeks.¹³ The changes in TC, LDL-C, HDL-C, and TAG were 5%, 4%, 12%, and -33%, respectively. The postprandial TAG response to a fat-rich meal was reduced by 29% and the TC/HDL-C ratio decreased by 4%. These responses were relatively similar to our prior findings, indicating that the type of fat is not the sole factor affecting lipid responses, although omega-3 fatty



“...those in the low-carbohydrate group experienced greater improvements in high-density lipoprotein-cholesterol (HDL-C)¹ and triglycerides.”¹⁻³

may adversely affect serum lipids and increase risk of cardiovascular disease. Preliminary findings challenge this argument. With the exception of a small, transient increase in total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C) during the third month of one study,¹ there were no differences in TC or LDL-C concentrations between groups across the three studies. Furthermore, compared with the conventional group, those in the low-carbohydrate group experienced greater improvements in high-density lipoprotein cholesterol (HDL-C)¹ and triglycerides.¹⁻³ No significant differences in blood pressure were observed between groups in any of the studies.

Discussion. Based on these limited findings, it appears that the low-carbohydrate approach may be more efficacious than the conventional

Table 1. Summary of Participant Characteristics and Findings

	Foster ¹ (12-month data)	Brehm ² (6-month data)	Samaha ³ (6-month data)
Sample size (n)	63	53	132
LC	33	26	64
C	30	27	68
Attrition(%)			
LC	39.4	15.4	33.0
C	43.3	25.9	47.0
Sex			
Male	20 (12 LC/8 C)	N/A	109 (51 LC/58 C)
Female	43 (21 LC/22 C)	53 (26 LC/27C)	23 (51 LC/10 C)
Age (years)			
LC	44.0	44.2	53
C	44.2	43.1	54
Baseline Weight (kg)			
LC	98.7	91.2	130.0
C	98.3	92.3	131.8
Baseline BMI (kg/m²)			
LC	33.9	33.2	42.9
C	34.4	34.0	42.9
Results: % Change			
Weight Loss			
LC	-7.3	-9.3	-4.5
C	-4.5	-4.2	-1.4
Triglycerides			
LC	-28.1	-23.4	-20
C	1.4	1.6	-3.9
Total Cholesterol			
LC	0.2	-0.4	1.1
C	-5.5	-0.9	-0.5
Low-density lipoprotein			
LC	0.5	-0.7	4.4
C	-5.8	-5.3	2.5
High-density lipoprotein			
LC	18.2	13.4	0
C	3.1	8.4	-2.4
Glucose			
LC	5.3	-9.1	-8.6
C	2.4	-3.9	-1.6
LC= low-carbohydrate diet; C=conventional diet			

acids did result in slightly greater reductions in fasting and postprandial TAG responses.

In addition, improvements in body composition, as evidenced by significant reductions in weight and fat mass and significant increases in lean body mass, were observed in these men.¹⁴ The potential role of these changes in body weight and composition on blood lipids is not apparent from this study. The underlying mechanism for this effect on body composition is unknown but may be related to hormonal adaptations, such as reduced insulin levels, which may explain a large portion of the changes in fat mass, since inhibition of lipolysis can occur at relatively low concentrations of insulin.¹⁵ Thus, even small reductions in insulin may be permissive to mobilization of body fat on a low-carbohydrate diet.

Study 3. In our third study, 10 normal-weight, normolipidemic women consumed isoenergetic diets for 4 weeks in a crossover fashion with a 4-week washout period between diets.¹⁶ One diet was low in carbohydrate (10% of energy from carbohydrate) and naturally rich in saturated fat and the other was a low-fat diet. The differences in TC, LDL-C, HDL-C, and TAG were 16%, 15%, 33%, and -33%, respectively, for the low-carbohydrate diet versus the low-fat diet. The postprandial TAG response to a fat-rich meal was reduced by 16% and the TC/HDL-C ratio decreased by 13% with low-carbohydrate intake.

The pattern of lipid responses in normal-weight women is consistent with our prior work in men, but there were differences in the relative magnitude of the changes. The increases in TC and LDL-C were greater but the increase in HDL-C was of a greater magnitude, making the increase in TC/HDL-C ratio larger in the women. A low HDL-C level is inversely associated with risk for coronary heart disease.¹⁷ In the Adult Treatment Panel III,¹⁸ a high HDL-C value (≥ 60 mg/dL) is considered a negative risk factor and removes one risk factor from the total

count used for setting treatment goals for LDL-C. Prior to the low-carbohydrate diet 20% of women in the study met the criteria of high HDL-C (≥ 60 mg/dL) and after the low-carbohydrate diet 80% met this criteria.

Discussion. The duration of our studies have been short and it is unknown if the changes in lipids would persist over longer periods of time. Our studies focused on measuring risk factors for CVD, yet we did not measure all biomarkers (eg, those related to inflammation, endothelial function, and thrombosis), nor did we assess other important clinical endpoints (eg, renal function; bone health).



“Our work indicates that a short-term isoenergetic low-carbohydrate diet improves some CVD risk factors (fasting and postprandial TAG and HDL-C) but may adversely affect others (TC and LDL-C).”

Nevertheless, our work indicates that a short-term isoenergetic low-carbohydrate diet improves some CVD risk factors (fasting and postprandial TAG and HDL-C) but may adversely affect others (TC and LDL-C). Although LDL-C tends to increase, we have shown that this is largely a result of increases in the larger diameter particles and not the smaller more atherogenic LDL particles.^{13,16}

Also worthy of mention is the metabolic syndrome, a highly prevalent multifaceted clustering of CVD risk factors with key features of central obesity, insulin resistance, dyslipidemia, and hypertension, as well as chronic inflammation, procoagulation, and impaired

fibrinolysis. It is estimated that nearly 25% of Americans > age 20 and 40% of Americans > age 40 have metabolic syndrome,¹⁹ a situation described as an epidemic healthcare crisis.²⁰ Current therapies are based on interventions promoting weight loss and physical activity, but diet represents another behavioral aspect that could impact significantly on the risk factors of metabolic syndrome.

The dyslipidemia of metabolic syndrome includes increased fasting and postprandial TAG, low HDL-C, and predominance of small LDL particles. As noted above, these lipid disorders are improved with a low-carbohydrate diet, even without weight loss. Thus, carbohydrate restriction should be viewed as a viable treatment approach for metabolic syndrome.

In summary, isoenergetic low-carbohydrate diets appear safe in the short-term, but future research is necessary to completely understand the overall health implications.

More Research Needed

Editor's note: While research on the merits of very low-carbohydrate diets for weight loss and heart health accumulates, most public health messages and dietitians will continue to recommend a nutrient-dense diet that is low in fat (particularly saturated and trans-unsaturated fatty acids) and provides needed omega-3 fatty acids and fiber. As summarized above, very low-carbohydrate diets should not be recommended to the public at large until further research examining the effects of this type of diet on other health risks is available. ■

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“Prior to the low-carbohydrate diet 20% of women in the study met the criteria of high HDL-C (≥ 60 mg/dL) and after the low-carbohydrate diet 80% met this criteria.”

Working with the “Eating Disordered Self”

by Carolyn Costin, MFT

This article is provided to increase the nutrition professional's awareness of the psychotherapeutic process in the treatment of eating disorders. If the nutrition professional chooses to implement strategies from this article, it is important to make adaptations appropriately and to stay within one's scope of practice. Consultation or ongoing supervision with a psychotherapist or dietitian experienced in disordered eating treatment is recommended to clarify boundaries and scope. —Disordered Eating Editors

Anyone who works closely with individuals with eating disorders realizes that their symptoms go beyond dieting, weight preoccupation, and other issues with food. In reality, the symptoms of disordered eating are behavioral manifestations of a “disordered self.” By coming to understand this disordered self, the patient can discover the meaning behind the symptoms and the purposes they serve. Indeed, an essential part of healing and recovery is understanding how and why the disordered self turns to starving, bingeing, or purging as a means to cope.

Substitutes for Unmet Needs

An eating disorder is an effort to cope, communicate, defend against, and even solve other problems—yet, paradoxically, the disorder itself creates many serious problems.¹ Eating disorders typically arise out of unmet developmental needs. When these needs are not fulfilled, adaptive measures are adopted in an attempt to feel whole, safe, and secure. For some persons, food, weight loss, and eating rituals can serve this purpose. Perhaps in earlier times other methods of substitution were sought to adapt to unmet needs. But today, given the sociocultural pressures of our “Thin Is In,” weight-obsessed

society, it seems logical that at-risk individuals would turn to dieting and weight loss for validation and acknowledgment.

The symptoms of disordered eating represent expressions of (and defenses against) feelings, needs, and the assertion of self that has found no other way out. Consider the following:

- Dieting may turn into starving in an attempt to establish a sense of power, worth, or being special when caregivers fail to provide adequate “mirroring” responses, such as praise.
- Bingeing may initially be a response to starving, but later it may serve a self-soothing function in those who are developmentally deficient in this area.
- Purging may begin as a means to get rid of unwanted calories, and end up as a way to expel unwanted anger or anxiety.



“In reality, the symptoms of disordered eating are behavioral manifestations of a ‘disordered self.’”

- A young woman afraid of her own needs might take dieting to the extreme, turning it into an expression of denial of even a need for food.

Splitting from the “Core Self”

As eating rituals become substitutes for getting one's needs adequately met from people, the usual process of personality development is disrupted in the person with an eating disorder.²⁻⁵ The person's true needs are sequestered and cannot be integrated

into the core self, thus remaining unavailable to awareness and operating on an unconscious level. As a result, a separate adaptive self emerges.

The symptoms of disordered eating comprise the behavioral component of this separate, split-off self—the “eating disordered self.” This adaptive self has its own set of needs, behaviors, feelings, and perceptions, all of which are dissociated from the individual's core self experience. The eating disordered self functions to express, mitigate, or in some way meet underlying unmet needs and make up for the developmental deficits.

The problem is that disordered eating behaviors are only a temporary fix, necessitating that the behaviors be continually repeated. The person becomes dependent on these behaviors (“external agents”) to fill the missing deficits. Thus a cycle of addiction is established—not an addiction to food but an addiction to whatever function the disordered eating behavior serves. Self-growth cannot take place, so the underlying deficit in the self remains.

Discovering and Changing Adaptive Functions

The goal of treatment is to discover the adaptive functions of the person's disordered eating- and weight-related behaviors and then replace them with healthier alternatives. Disordered eating behaviors commonly serve a variety of adaptive functions, as follows:

- Comfort, soothing, nurturance
- Numbing, sedation, distraction
- Attention, cry for help
- Discharge tension, anger, rebellion
- Predictability, structure, identity
- Self-punishment or punishment of “the body”
- Being in control
- Create small or large body for protection/safety
- Avoidance of intimacy and needs

■ Blaming oneself (eg, thinking "I am bad.") rather than blaming someone else (eg, an abuser)

Disordered eating treatment involves helping a patient to get in touch with his or her unconscious, unresolved needs and provide in the present what the individual was missing in the past. For example, if a patient with bulimia nervosa reveals that she binged and purged after a visit with her mother, it would be a mistake for the therapist, in discussing this incident, to focus solely on the relationship between mother and daughter. The therapist needs to talk to the "part" of the patient that did the bingeing and purging, exploring the meaning of those behaviors for that part of self. The patient may say she is distraught about the bingeing and purging, yet since she did this behavior there is a part of her that wanted to do it. Getting in touch with that part—ie, dealing directly with the eating disordered self—is essential.

Talking to the Healthy and Disordered Parts

It is important to wait for a "window" into the eating disordered self rather than simply bring up this issue without such an opening. For example, in the above scenario the patient might say, "I'm sick of bingeing and want to stop, but after the fight with my mother I went and did it again." A response to this might be, "So there's a part of you that wants to stop this behavior, but another part felt the need to do it at that time. I would like to hear more from the part that wanted to binge. What did that part of you feel after the fight with your mom?"

Eventually, as the therapist helps the patient see she is in conflict with herself, the therapist can get the patient to begin to have a dialogue with her own two parts. Ultimately it is the patient's healthy self, the part that wants to stop bingeing, that has to control the eating disordered self. No one else will be able to do this.

A Role for Journaling

There are many ways patients can begin to contact their eating disordered self. One method is to have patients write in a journal whenever they feel the desire to engage in a disordered eating behavior. For example, you might ask a patient



"Disordered eating treatment involves helping a patient to get in touch with his or her unconscious, unresolved needs and provide in the present what the individual was missing in the past."

with bulimia to write in a journal prior to bingeing so he or she can hear from the part that wants to binge.

However, it is important to say that the assignment is not to get the patient to "journal *instead of* bingeing," because at that moment the patient does not want to be stopped, and, hence, will not do the assignment. Rather, this assignment is intended to enable the patient to get in touch with the part that does the bingeing. That part needs to simply write about what is going on, what the feelings are, why there is the desire to binge, and so forth. If the patient still wants to binge, that is fine. Most patients are surprised at this intervention.

The next step might be to have the healthy self write back, so that eventually the patient has a dialogue with the two selves on paper. At some point it might also be useful to have these two selves role play in a

session. The therapist's task is to help strengthen and support the patient's healthy self. In doing so, though, the needs of the eating disordered self have to be addressed. The final outcome is an integration of these two parts—an integration of self where there is a whole person who is conscious of his or her needs and can meet them in healthier ways. ■

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All Nonalcoholic Fluids Contribute to Hydration

by Kristin J. Reimers, MS, RD, and Liz Marr, MS, RD

We have all heard the recommendation to "drink eight 8-oz glasses of water per day" and have probably often passed this along to clients. But is this "truism" really true? Close examination of the literature reveals that there is surprisingly little scientific research to support the "8 x 8" recommendation for the general population of normal, healthy, non-athletic adults. In anticipation of the

dietary composition and other factors), it is impossible to set a general water requirement."¹

It is important to note that "1 mL/kcal expended" is a population-based recommendation, not a requirement for individuals. Other variables besides energy expenditure, such as environmental temperatures and individual variations in sweat rate, can influence daily fluid needs. For example, hot and arid environments can increase sweat rate and augment hydration needs. Additionally,

people with larger body surface area tend to lose more water through evaporation. Thus, it is difficult to make *general* fluid intake recommendations (eg, "drink eight 8-oz glasses of water each

day") because of large inter- and intra- individual variability. The requirement of each person varies.

Different Fluid Types and Hydration

The RDA recommendations are for "fluid" replacement, but consumers often interpret "fluid" to literally mean plain water. In fact, "fluid" is available from all beverages as well as many foods. Fruits and vegetables, for example, generally have a high water content, whereas grains and meat products generally have a low water content. Thus, the amount of fluid an individual receives from food, and in turn his or her daily beverage requirement, depends largely on his/her diet. For example, someone who eats a relatively dry diet would require more fluid from beverages than someone who eats a diet rich in water-based foods, such as fruits and vegetables.

This point is supported by recent research conducted at the Center for Human Nutrition, at the University of Nebraska Medical Center, in

Omaha. Grandjean et al² evaluated the hydration capabilities of two diets differing in fluid type but similar in total amount of fluid provided. Using a crossover design, 27 healthy male volunteers were randomly assigned to a diet providing water as part of the total daily fluid provision (water group) or a diet containing no water (no water group).

Beverages included in the study were selected to reflect those common to the American diet, with the exception of milk and alcoholic beverages. Approximately one-third of the beverage volume in the water condition was plain drinking water. An equal amount of a noncaloric, caffeinated cola replaced the water in no water group. The remaining fluid volume was equally divided among juice, coffee, caloric, caffeinated cola, and noncaloric, noncaffeinated cola in both trials.

Thirty-five mL/kg body weight was selected to determine the daily fluid volume for each subject. This volume, less water content of the foods, was used to determine the volume of beverage for each subject. Mean water content of the food portion was 550 mL (range 466-649 mL) and mean beverage volume was 2088 mL (range 1638-2946 mL). Environmental factors, physical activity, and food were held constant for 3 days on both regimens. The same 1-day menu was served repeatedly to the subjects during the study and included commonly eaten foods (eg, bagels, turkey sandwich, chips, hamburgers, raw carrots, applesauce, ice cream). Hydration status was assessed via urine osmolality, specific gravity, chloride, sodium, and potassium levels, and the sodium/potassium ratio.

Based on these urinary measures, no difference was found in hydration status between the two diets. The results, while preliminary, suggest that total fluid volume, not fluid source, is the most important factor



"The results, while preliminary, suggest that total fluid volume, not fluid source, is the most important factor determining fluid status."

National Academy of Sciences Food and Nutrition Board's Dietary Reference Intakes for Electrolytes and Water, we provide this brief overview of the science regarding hydration for the general population.

General vs Individual Recommendations

The fluid recommendation set forth by the 1989 Recommended Dietary Allowances (RDAs) was 1 mL/kcal of energy expenditure. Interestingly, this recommendation has been in place since the RDAs were established in 1945.

The rationale for selecting this recommendation was described in the text as follows: "The primary determinant of maintenance water requirement appears to be metabolic but the actual estimation of water requirement is highly variable and quite complex. Because the water requirement is the amount necessary to balance the insensible losses (which can vary markedly) and maintain a tolerable load for the kidneys (which may vary with

determining fluid status. This should not imply that one need not drink plain water, nor does it suggest that individuals should be encouraged to drink fewer fluids. What the study does show is that water was equally available from the diets provided. Plain water, as well as other beverages, will support hydration.

It should be noted that this research was conducted on healthy, sedentary men. It is unknown whether the results of the study would also be true for athletes. Although fluid requirements for athletes before, during, and after exercise have been widely studied and recommendations have been published, little is known about the fluid requirements of athletes during sedentary conditions (eg, on "off days").

The Caffeine Question

A belief almost as pervasive as the "8 x 8" rule is that caffeine is dehydrating and thus should be avoided when rehydration is the goal. While caffeinated beverages do not support rehydration as well as noncaffeinated beverages, to say that they do not contribute at all and in fact are "dehydrating" is also incorrect.

The above study by Grandjean et al² found caffeinated beverages to be hydrating. In addition, a previous study by the same research group³ showed that consumption of caffeinated beverages supported hydration in normal, healthy men who were regular caffeine drinkers. In this counterbalanced, crossover study, 18 healthy adult males consumed water only or water plus three combinations of beverages (carbonated, caffeinated caloric, and noncaloric colas and coffee). Body weight, urine, and blood assays were measured before and after each treatment. Based on these measures, no differences in hydration status were detected.

The lack of an effect of caffeine on urine volume reported by Grandjean et al² is inconsistent with studies reporting caffeine-induced diuresis. The most probable reasons for this

discrepancy are that the studies reporting acute diuresis in response to caffeine involved caffeine-naïve subjects, and/or they made assumptions about the effect of caffeine on hydration status based on acute urine output (eg, urine output over a few hours).^{4,8} The Grandjean et al. studies^{2,3} used 24-hour urine samples to measure of hydration status, which is considered a more valid measure because the amount of urine produced in a short time does not predict output over a longer period.⁹ In addition, subjects in the Grandjean et al studies were routine caffeine consumers. It is well known that caffeine tolerance develops after habitual consumption.¹⁰⁻¹² Thus, caffeine tolerance may also partially explain the lack of treatment effect on urinary output.

In a 2002 literature review of 10 studies on caffeine consumption, fluid balance, and exercise, researcher Lawrence Armstrong concluded: "The literature indicates that caffeine consumption stimulates a mild diuresis similar to water, but there is no evidence of a fluid-electrolyte imbalance that is detrimental to exercise performance or health. Investigations comparing caffeine (100-680 mg) to water or placebo seldom found a statistical difference in urine volume.

In the 10 studies reviewed, consumption of a caffeinated beverage resulted in 0-84% retention of the initial volume ingested, whereas consumption of water resulted in 0-81% retention. Further, tolerance to caffeine reduces the likelihood that a detrimental fluid-electrolyte imbalance will occur."¹³

In another study on athletic performance, caffeine ingestion of 490 mg to 680 mg (8.7 mg/kg body weight) in a sport drink consumed during a 4-hour cycling trial did not result in a

marked increase in diuresis compared with a no-caffeine trial. The authors concluded that those desiring to use a caffeinated beverage for fluid replacement during exercise should do so without concern about caffeine-induced diuresis.⁷

Using Thirst as a Guide

A common recommendation given to athletes is to drink before they are thirsty and continue to drink past the point at which thirst is quenched. This recommendation is derived from research indicating that athletes allowed to drink ad libitum during exercise fail to replace all fluid lost.^{17,18} Responding to thirst (drinking "ad libitum") is insensitive during conditions of physiologic stress,^{15,16} such as training.

While this recommendation may be a good rule of thumb for athletes, it may not be appropriate for the general public. Under ordinary conditions, many variables influence drinking behavior besides water deficit, including culture, sensory qualities of beverages, availability, and convenience. When a variety of foods and drinks are available,



"While caffeinated beverages do not support rehydration as well as noncaffeinated beverages, to say that they do not contribute at all and in fact are 'dehydrating' is also incorrect."

voluntary fluid ingestion tends to exceed the volume necessary for fluid balance.¹⁴ Thus, healthy adults who are not preparing for, engaging in, or recovering from vigorous exercise can stay hydrated by keeping fluids available and drinking when they are thirsty.

And therein lies an important nuance of hydration advice for the general public: Athletes do need to be more regimented about their fluid

intake than the general population. Part of the confusion about hydration stems from the fact that guidelines intended for athletes crossed over into mainstream hydration recommendations.

Bottom Line: Various Sources Can Hydrate

Rather than giving fluid replacement advice focused on water, dietetics professionals should encourage people to enjoy a variety of beverages and fluid containing foods and feel confident they are staying hydrated. Caloric or noncaloric beverages do not differ in their effect on hydration,^{3,4} so beverage choice depends on other considerations, such as the individual's energy needs and preference. For those who consume a relatively dry diet, which may describe the many Americans who underconsume water-rich fruits and vegetables, beverages are an important source of fluids.

For nutritionists striving to make evidence-based recommendations for normal healthy adults, the challenge is great. Additional research on fluid needs of healthy, free-living adults is needed. Nonetheless, the available evidence suggests that the amount of fluid needed by individuals is variable and that all foods and non-alcoholic beverages can contribute to hydration. The average sedentary adult who responds to thirst, monitors urine color and quantity, and acts accordingly will be well-hydrated. This information challenges the hydration truisms to which the public has grown accustomed and provides dietetics practitioners with the opportunity to begin tailoring hydration recommendations for normal, healthy individuals. ■

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“...the available evidence suggests that the amount of fluid needed by individuals is variable and that all foods and nonalcoholic beverages can contribute to hydration.”



CONFERENCE HIGHLIGHTS

SCAN Pre-FNCE Sports Nutrition Workshop

October 25, 2003

by Christopher Mohr, MS, RD

Preceding the 2003 ADA Food & Nutrition Conference (FNCE) in San Antonio was the SCAN-sponsored program, "The Science and Practice of Sports Nutrition." Some important points from three presentations in this program are summarized below.

■ Fuel Usage

Athletes often ask, "What is the ideal meal to eat prior to a game or competition?" Ed Coyle, PhD, professor, Department of Kinesiology and Health Education, University of Texas, has done extensive research in carbohydrate metabolism and fuel usage during exercise. In his presentation, "Energy to Burn: Separating Science from Hype Regarding Exercise and Substrate Metabolism," Coyle discussed the latest research and recommendations.

Key points were as follows:

- Carbohydrates are the primary fuel source during exercise.
- The pre-competition meal should focus mainly on easily digested carbohydrates and be low in fat.
- High-fat, low-carbohydrate diets do not enhance performance.
- The meals leading up to competition will do more for performance than one single pregame meal.

Recent studies are attempting to uncover exactly why and how one fuel source is used over another. Although carbohydrate is utilized the most during exercise, there is never a time when only one fuel source is used. It is hoped that by better understanding how fuel sources are used, we can give athletes better advice on what constitutes optimal pregame nutritional intake.

According to Coyle, research still supports what sports nutritionists have been telling athletes for over a decade: Optimizing glycogen storage

is paramount for peak performance. Carbohydrate intake causes an increase in insulin, which allows the body to take up more glucose and less fat. Therefore, eating a meal primarily composed of carbohydrate to make the glucose more readily available for the working muscles is ideal.

This meal should provide just a moderate amount of protein and be low in fat. While fat itself can be utilized during exercise, Coyle stated



"Although carbohydrate is utilized the most during exercise, there is never a time when only one fuel source is used."

that it takes approximately 4 hours after consumption for fat to be available to the muscles as free fatty acids.

Pregame, it is also best to eat more easily digested foods, such as fruit, rather than nonrefined foods such as beans, oatmeal, and whole-grain products. It is also recommended that the stomach be fairly empty during competition so blood can be shuttled to the working muscles instead of being needed in the stomach for digestion.

The best time to figure out what foods work for individuals is prior to practices, not the game itself. Other foods besides fruit that seem to work well for many athletes are yogurt, sports bars, the new yogurt drinks, and milk (chocolate milk provides more carbohydrates, so it may be useful). Experimenting on the day of a big competition is not the best idea. Athletes should use the guidelines outlined above and then some trial and error.

Focusing on the pregame meal

alone is not sufficient. Optimizing glycogen stores cannot be accomplished immediately prior to competing, and it should be taken care of throughout the days leading up to competition. It takes about 20 hours to fill glycogen stores, without interruption from another practice or event, so in addition to the pregame meal, food choices in the days prior to competition are crucial. Again, they should consist of mainly carbohydrates, with some fat and protein.

Coyle also discussed the hot topic of tinkering with macronutrient combinations to enhance performance. There is some recent research about the effect of high-fat diets on performance. Increasing fat intake does, in fact, spare glycogen usage. While this may appear to be good, the only effect high-fat diets actually seem to have on performance is a change in the fuel mixture used during activity. Increasing fat does not appear to positively or negatively affect performance.

■ Supplement Update

Several dietary supplements used by athletes were discussed in a presentation by Douglas Kalman, MS, RD, director of nutrition, Miami Research Associates. Highlights included:

Creatine. Kalman reviewed many of the activities creatine has been tested in, and offered the following synopsis:

- Creatine has been shown to be effective in short-duration, high-intensity sports (weight lifting, sprinting, etc).
- Creatine has shown no positive effect on endurance performance.
- Creatine has shown no positive effect on swimming performance.

Creatine appears to be safe, Kalman noted. While there are many reports of increased rates of cramping, dehydration, and

strains/pulls, these anecdotal claims have not been duplicated in research settings. One side effect of creatine is weight gain, which is often desired by athletes. At this time, it is unclear whether this weight gain is solely from increased water retention or increased protein synthesis within muscle.

Glutamine: This amino acid constitutes about 60% or more of the intramuscular amino acid pool. Glutamine is used often in patients with muscle wasting diseases, such as HIV and cancer. As little as 2 g of glutamine/day has been shown to improve nitrogen retention, a marker of muscle breakdown, in muscle wasting diseases.

Because of the research in diseased patients, companies promote this dietary supplement as an anti-catabolic agent (ie, it will prevent or reduce muscle breakdown). However, like many other dietary supplements introduced with much promise, glutamine has not been beneficial to athletes. The few studies conducted on glutamine use in athletes have shown no effect on muscle recovery.

HMB: Beta-hydroxy beta-methylbutyrate (HMB) has been shown to improve nitrogen balance in lab rats, suggesting it may more quickly reverse muscle damage. Similarly, supplementing horses with HMB has been shown to improve their performance. However, the few small studies of HMB conducted on humans have shown no benefits.

Protein: Some recent studies suggest that essential amino acids (AA) supplementation can help muscles recover more quickly. It is understood that weightlifting is a critical part of most athletes' training, but weightlifting itself is a double-edged sword. While weightlifting is necessary to gain muscle strength and size, the act itself promotes muscle breakdown, making it necessary to consume adequate calories, including protein, to provide muscles with the necessary nutrients to recover and grow.

Researchers have begun to assess

whether providing essential AA before, during, and after a workout helps restore muscles more quickly. Previous studies show that consuming protein in a 1:3 or 1:4 ratio to carbohydrate immediately after a workout is beneficial. Several recent studies on humans have demonstrated that approximately 6 g essential AA taken before and during the workout helps enhance protein utilization. This small amount provides the necessary fuel to enhance muscle protein synthesis and decrease the breakdown of muscles. Researchers are still determining the proper dose; some advocate a dose of 6 g AA per 70 kg



“Like many other dietary supplements introduced with much promise, glutamine has not been beneficial to athletes.”

body weight. Research is underway to determine if AA intake is dose-dependent.

Green tea. Scientists have long known about the antioxidant properties of green tea. Now researchers are beginning to measure its role in weight loss as well. Green tea is high in catechins; the catechin of interest is epigallocatechin (EGCG), which is found in very high doses in green tea. A few studies, mainly in rats, have shown high doses of this compound may inhibit the enzyme lipase, which is necessary in fat metabolism. This, in turn, may reduce fat digestion.

Research in humans is in its infancy and thus far studies have not shown EGCG to have a positive effect on weight loss itself. One study did demonstrate that those taking EGCG increased their resting metabolic rate by 4%, but this did not correlate to significant changes in body weight

and body fat. More research is needed in this area, since it does show some promise. However, it is too early to recommend EGCG as a weight loss supplement.

■ Use of Prohormones

Ever since home run slugger Mark McGuire admitted using androstenedione (andro), interest in prohormones (also called prosteroids) has increased. Andro was one of the first supplements in this category, and after it proved to be ineffective and have adverse effects, supplement makers began producing other prohormones. Although prohormone supplements are banned by the National Collegiate Athletic Association (NCAA) and many professional sports leagues, athletes may still be interested in them.

In his presentation, “Hormones and the Timing of Nutrients,” Tim Ziegenfuss, PhD, chief scientific officer, Phoenix Laboratories, discussed his research in prohormone supplementation. Supplementing with prohormones is theorized to increase testosterone levels, subsequently increasing lean body mass.

Ziegenfuss noted that it is difficult to measure hormone levels in subjects because of inter- and intra-subject variability. For example, time of day, previous exercise, sleep patterns, and meals all affect hormone levels. Therefore, careful consideration must be taken when attempting to assess and scientifically measure hormone levels.

Keeping that in mind, some newer prohormones do show promise in transiently increasing testosterone levels. But the most important consideration is still whether this transient increase correlates to lean body mass gains or any positive effects. This research has not yet been performed.

The bad news regarding prohormone supplementation is its safety profile. Several studies have revealed a number of adverse effects, such as decreases in high-density lipoprotein (HDL) cholesterol,

increased estrogen levels, and potential increases in fatty tissue. Prohormone products are banned by the NCAA, International Olympics Committee (IOC), National Football League (NFL), and many other professional sports organizations. Therefore, it's best to urge athletes to leave these products on the store shelves, no matter how promising they sound.

Christopher Mohr, MS, RD, is a doctoral student majoring in exercise physiology at the University of Pittsburgh. He previously was a sports nutritionist for the University of Massachusetts athletic department. This article was adapted, with permission, from Training & Conditioning, vol. 13, December 2003.

**Renfrew Conference
November 13-16, 2003**

by Kimberly Wright Cover, RD

Highlights of the 2003 Renfrew Conference, "Feminist Perspectives and Beyond: The Changing Face of Eating Disorders" are summarized below. For more information, contact the Renfrew Center Foundation for Eating Disorders at 877/367-3383 or visit www.refrew.org.

■ Compulsive Exercising

Page Love, MS, RD, gave an overview of supplement use in athletes, diet pills, and fad diets. She provided advice on dietary supplements that pose the most risk, including ephedra, Mormon Tea, Yohimbine, and Sida Cordifolia, and noted that information about the safety and efficacy of dietary supplements can be found at www.supplementwatch.com and www.comsumerlab.com.

According to Love, three signs suggest a client may be suffering from compulsive exercise:

- a compulsion to exercise daily
- feeling depressed, irritable, and anxious when forced to stop exercising
- constant thoughts about calories burned from exercise.

Some possible strategies to stem compulsive exercise include: allowing at least 2 rest days per week, keeping sessions of cardiovascular exercise to a maximum of 1 hour, and considering cross-training with varying activities.

■ Disordered Eating During Pregnancy

Jessica Setnick, MS, RD, presented a session on pregnant women with eating disorders. The prevalence of



"The prevalence of disordered eating in pregnancy may be as high as 0.1%, with active bingeing or bulimia being more common than anorexia."

disordered eating in pregnancy may be as high as 0.1%, with active bingeing or bulimia being more common than anorexia. Mental health consequences include stress (which may be linked to premature delivery), depression, and a feeling of being out of control that may lead to anxiety and more restricting. Setnick provided questions to use to encourage disclosure. Among these: "Are you satisfied with your eating patterns?" and "Do you eat in secret?"

■ Nutrition Therapy in Disordered Eating

Molly Kellogg, RD, LCSW, shared her in-depth knowledge of nutrition therapy. She reviewed the important role of supervision, which is the process of interacting with a professional colleague to improve your work with clients.

Highlighting various concepts from her book, *Counseling Tips for Nutrition Therapists*, Kellogg presented techniques for focusing on the process rather than the content of an indi-

vidual client session. She noted that an indication that a client has overstepped boundaries may be when a counselor feels resentful during a session. Kellogg also examined the art of listening, and attendees practiced the skill of mirroring.

■ Overweight/Obese Children and Adolescents

Marcia Herrin, EdD, MPH, RD, stressed the importance of a multidisciplinary approach to child and adolescent overweight/obesity that includes a mental health professional. She reviewed current body mass index (BMI) standards and definitions, including the new classification system for "at risk" children (a BMI > 85th percentile) and "overweight" (a BMI > 95th percentile). She defined our current "toxic environment" as one containing high calorie food options, difficult exercise situations, and mixed media advertising messages with lots of food and thinness.

Herrin believes binge eating is a huge problem in kids and is a natural result of restrictive eating. Prevention is key and includes:

- fostering an environment that makes healthy eating and exercise the easy choice
- good role modeling
- providing appropriate meals, snacks, and food options
- establishing consistent meal and snack times
- encouraging fun active body movement
- limiting TV-watching by having kids ask for permission to turn it on

■ Parenting Styles in Family Treatment

Chris Haltom, PhD, and Sue Travis, MS, RD, CDN, examined the progressive-phase treatment model for working with families affected by eating disorders. This model reflects a multidisciplinary approach that includes a nutrition therapist and mental health practitioner.

Different parenting styles were reviewed. These include rigid-overcontrolling, permissive-



indulgent, enmeshed-intrusive, and disengaged-nonempathetic. An understanding of parenting styles can empower a nutrition therapist when used in conjunction with weight management interventions. Engagement, assessment, and treatment were discussed, including nutrition goals and intervention strategies.

Some sample goals for family education in nutrition treatment include:

- educate family about approach to helping patient develop a healthy relationship with food
- help family to view issue from the disordered eating perspective
- identify ways to support health and not the disorder
- educate about normal and abnormal intake patterns, hunger patterns, metabolic rate, somatic sensations, etc.

■ Parenting and the Developing Mind

A keynote lecture by Daniel Siegel, MD, provided practical suggestions to enable a therapist to increase self-understanding, promote healing, and enhance interpersonal skills utilizing the revolutionary field of "interpersonal neurobiology." He reviewed the biology of the brain and discussed how this relates to psychic and emotional development and its application for successful parenting, psychotherapy, and education.

■ Health At Every Size

In another keynote lecture, Jon Robison, PhD, MS, examined the Health At Every Size (HAES) movement, which offers practitioners an

effective alternative for providing compassionate, health-enhancing care. He gave an overview of America's thinness obsession and the unique social, economic, and political factors involved. Certain entities, such as the pharmaceutical industry, cosmetic/fashion industry, and the medical field, have a vested interest in keeping things status quo. Robison cited statistics supporting the notion that the obesity problem has been greatly exaggerated. He believes that a healthy weight begins with self-



"An understanding of parenting styles can empower a nutrition therapist when used in conjunction with weight management interventions."

acceptance and normal eating. The clinical applications of HAES were reviewed in a workshop presented by Robison and Harin Feibish, CSW, director of Renfrew's Body Balance, a program that embraces the concept of HAES. The main components of HAES are as follows: health versus weight-centered care; self-acceptance versus the pursuit of ideal; internally versus externally directed eating; and physical activity versus exercise. Using the HAES approach, ideas to measure success include:

- improved quality of life and self-acceptance
- amelioration of medical problems and decreased reliance on medications
- increased pleasure from physical activity
- Increase use of internally-directed eating style
- decreased obsession with food

■ Athletes with Eating Disorders

Roberta Trattner Sherman, PhD and Ron Thompson, PhD examined current eating disorders in athletes, leading attendees through the unique world of today's collegiate athletes. Thompson discussed the difficulty in identifying an eating disorder in an athlete, even with a thorough working knowledge of sports.

Estimating the prevalence of disordered eating to be lower in athletes than in the general population, Thompson postulated that engaging in sports might actually offer protection to those involved. Research was presented that indicate a 60% prevalence of amenorrhea in women athletes and suggest that eating well enough to support the required activity can normalize menstruation.

The presenters ended their session noting that a coach can precipitate, perpetuate, or prevent eating disorders. Thus, coaches play an important role on the team and can facilitate treatment. ■

Kimberly Wright Cover is sports/clinical nutritionist and eating disorder specialist for The Sports Medicine and Performance Center of Children's Hospital of Philadelphia, King of Prussia, Penn.

ADA House of Delegates: Mid-Year Report on Professional Issues

by Rita Grandgenett, MS, RD

Among the key actions of the ADA House of Delegates (HOD) in 2003-2004 were matters concerning:

- identification of critical issues facing the future of dietetics education and the role of the dietetic technician registered (DTR) in dietetics
- the report of the Management Task Force
- the report of the Prevention Task Force.

During the Fall 2003 HOD meeting in San Antonio, two "mega" issues of fundamental concern were identified: (1) dietetics education and needs for the future; and (2) the DTR's role in the dietetics profession.

Mega Issue 1: Dietetics Education

Through electronic and face-to-face discussion and input from SCAN and other dietetic practice groups, HOD delegates identified the following issues and needs regarding education and credentialing:

- Current education of entry-level DTRs and RDs will not meet future needs of the profession.
- Flexibility is required to educate and credential future DTRs and RDs.
- Current education models for dietetics practitioners will not meet the future demands of the marketplace.

The question then arose: "What guiding principles can be utilized in shaping dietetics education for the future?" Delegates agreed on these guiding principles:

1. Conceptualize what is needed to produce an entry-level DTR and an entry-level RD, considering program length and didactic and supervised components

2. Develop innovative supervised practice settings that are critical to meet marketplace needs
3. Propose multiple new routes for entry into the profession to meet the evolving demands of the marketplace in order to provide greater flexibility for students and for recruitment of nontraditional students
4. Examine post-professional accredited specializations (master's degree and post baccalaureate specialty certificates) that provide career-laddering opportunities from DTR through advanced specialties
5. Explore ways to share innovation in dietetics education to meet the



"Confusion exists among members regarding the competencies and current roles of the RD and DTR, including scopes of practice and regulatory issues."

needs of the future via ADA communication vehicles

6. Include and reflect the perspectives of *all* stakeholders to address the education and credentialing of future RDs and DTRs and the education of advanced level dietetics professionals

The final approved motion reads: "Therefore, be it resolved that the HOD convene a task force to begin the creation of a new plan for the future of education and credentialing for RDs and DTRs, as well as for the education of advanced level dietetics professionals. The outline of this plan, which should reflect a "clean slate" approach and include a timeline, should be presented to the HOD for dialogue at its Fall 2004 HOD meeting."

Mega Issue 2: DTR Role in Dietetics

Identification and clarification of the DTR role within the profession has been discussed for years, yet several concerns continue. Confusion exists among members regarding the competencies and current roles of the RD and DTR, including scopes of practice and regulatory issues. Also, there are gaps between education of DTRs and their utilization in the marketplace. Moreover, competition exists between the DTR and RD for jobs in the marketplace.

HOD delegates agreed that the following basic assumptions must

drive resulting actions:

- DTRs are active members of the association
- DTRs are key partners in providing food and nutrition services
- Previous attempts to resolve the integration of

the DTR into ADA activities should be considered with a more concentrated effort to ensure a successful outcome.

The following motion was passed: "Therefore, be it resolved that the House of Delegates:

1. Challenges all RDs to embrace the role of the DTR in all practice settings by:

- Utilizing the DTR as a member of the team
- Promoting the value of the DTR and the variety of skills they possess
- Marketing the DTR to employers and administrators in all appropriate settings
- Creating opportunities for using the DTR to enhance the value of the

RD/DTR team as providers of food and nutrition services

2. Challenges all DTRs to collaborate with RDs to enhance understanding of the DTR role as a team member in all practice settings by:

- Promoting learning about the educational preparation and competencies of the DTR
- Identifying opportunities to support the RD in providing food and nutrition services
- Marketing DTR skills and knowledge to potential employers and administrators

3. Requests that the ADA Board of Directors review the material related to the HOD dialogue session and consider the following actions:

- Promote the value of the RD/DTR team, both internally and externally, through key messages placed in relevant Association communications
- Utilize inclusive terminology (ie, dietetics professionals) consistently in all Association communications, except for circumstances that warrant the use of only one of the two credentials

4. Requests that CADE, CDR, and appropriate stakeholders (including but not limited to DTRs, RDs, employers and educators of DTRs) review the roles of the RD and DTR to reduce confusion and more clearly delineate the distinction of responsibilities for more efficient utilization of the DTR."

Report of the Management Task Force Report

Many ADA leaders are troubled by the perception that management has

been viewed as a practice specialty rather than a skill set that permeates all areas of practice. In Spring 2003 the HOD charged a special task force to develop a plan that would support members in incorporating management into all levels of professional development and across all practice areas.

The task force identified that it is important for dietetics practitioners to: (1) value and integrate management skills sets into all areas; (2) market to stakeholders that dietetics professionals hold management



"In Spring 2003 the HOD charged a special task force to develop a plan that would support members in incorporating management into all levels of professional development and across all practice areas."

skills; and (3) demonstrate effectiveness of dietetics professionals as managers outside of the traditional foodservice arena.

The first step is the creation of a communications campaign to promote the value of management skills for all members regardless of their practice area. Showcasing successful

practitioners will also be useful in recruitment materials and in promoting mentors and role models for students.

The objective of the campaign will be to: "identify methods to re-engineer member's impressions of management in dietetics by highlighting a variety of resources and job opportunities available." In addition to ADA's current communication channels, the campaign could be web-based and provide free resources and toolkits for members.

Report of the Prevention Task Force Report

The task force has identified five short-term and three long-term strategies to position dietetics professionals as leaders in the area of prevention and wellness regardless of practice setting and to be perceived as such by other health professionals and consumers. The task force is gathering input from members and will finalize these strategies in Spring 2004. ■

Rita Grandgenett, MS, RD, is the SCAN delegate to the ADA House of Delegates and welcomes your input. If you have questions or concerns or would like to participate on HOD task force committees, please contact her at rita.grandgenett@kellogg.com or 269/961-3433.



NANCY CLARK'S SPORTS NUTRITION GUIDEBOOK (3RD ED.)

Nancy Clark, MS, RD
Human Kinetics, PO Box 5076,
Champaign, IL 61825
Telephone: 800/747-4457
www.HumanKinetics.com
2003, paperback, 406 pp, \$18.95,
ISBN: 0-7360-4602-X

The third edition of this popular guidebook continues the tradition of high-quality, practical nutrition guidance for health, fitness, and sport performance. The author, Nancy Clark, is nutrition director at Sports Medicine Associates, Boston, and consultant to the Boston Red Sox. She is a well-known and respected authority in sports nutrition. The target audience is physically active individuals who aspire to eat well for high energy, weight management, and optimal performance in sport, recreation, and everyday activities.

A hallmark of this book is the author's easy-going, direct, positive style that effectively translates scientific findings into everyday situations and practical examples. Applying key themes (eg, a recommendation for eating food at regular intervals) to various situations throughout the book adds value to the guidance and relevance for the reader.

The book is divided into three parts: (1) eating strategies for high energy; (2) energy balance and weight issues; and (3) recipes. The first part focuses on a nutrition plan for overall health, tips for eating around exercise (before, during, and after activity), and the relationship among nutrition, energy level, and performance. New or updated information that appears in this edition includes the following:

benefits of consuming whole grains and dietary fiber; healthful types and amounts of fat; Dietary Approaches to Stop Hypertension (DASH) diet; current information on glycemic index; controversies regarding carbohydrate, protein intake for activity; carbohydrate and protein in recovery after exercise; fluid guidelines; and caffeine, creatine, and

categories and focus on quickly prepared items that are tasty, attractive, and combine a variety of food groups.

The appendices include readings and resources, web sites, selected references, and information on how to become a registered dietitian and sports nutritionist. The book effectively mixes text with tables, sidebars, and illustrations. Sections on fad dieting, energy bars versus standard foods, a "portion distortion" comparison, and responses to questions by parents and clients add interest and ancillary information. The sidebar called "What's the best time to eat?" is particularly helpful for athletes and coaches. Working back from the time of the competitive event, this section contains concise, practical, and accurate nutrition guidance for pre-event fueling.

In summary, the third edition of *Nancy Clark's Sports Nutrition Guidebook* sets a high standard for accuracy and currency of basic sports nutrition information, application of scientific findings to practical situations, an effective communication style, and a can-do attitude. I recommend the book for health and fitness enthusiasts, recreational and competitive athletes, and health and fitness professionals. Sports nutritionists will benefit from the varied nutrition counseling experiences and educational tips presented by this author. For those who own earlier editions, updated information makes this book a worthwhile investment.

Reviewed by Patti Steinmuller, MS, RD, adjunct instructor in food and nutrition at Montana State University, Bozeman, Montana, where she teaches courses in nutrition for fitness and performance.

"Applying key themes (eg, a recommendation for eating food at regular intervals) to various situations throughout the book adds value to the guidance and relevance for the reader."

ephedra as dietary supplements.

The book's second part deals with body fat assessment and interpretation, weight management, body fat loss, muscle mass gain, and food obsessions. These issues are addressed in an empathetic, reassuring, nonjudgmental style that is characteristic of communication by a professional with extensive experience in nutrition counseling. Key themes include recognizing hunger as a request for fuel and practical nutrition strategies for weight gain and weight loss.

The third part offers cooking and food safety tips as well as recipes contributed by fitness enthusiasts, chefs, and sports nutrition professionals. The recipes are grouped into

EATING ON THE RUN (3RD ED.)

Evelyn Tribole, MS, RD
Human Kinetics, PO Box 5076,
Champaign, IL 61825
Telephone: 800/747-4457
www.HumanKinetics.com
2004, paperback, 216 pp, \$16.95,
ISBN 0-7360-4608-9

Evelyn Tribole, a registered dietitian who works as a counselor in private practice, columnist, author, and national media spokesperson, has released her third edition of *Eating on the Run*, adding to her published efforts that include cookbooks and related books on healthful eating.

The book consists of four parts. Part I, Nutrition in a Nutshell, focuses on nutrition basics and how to apply nutrition knowledge to food choices, especially when pressed for time. The author shares her own tips and those of her clients. Goals for good nutrition, reasons for eating breakfast, benefits and pitfalls of grazing and snacking, and speedy food shopping are addressed.

Part II, Strategies for Dining Out, shows readers how to arrive at mindful food choices and encourages readers to make special requests when eating out. Practical tips for eating on the road, at the office, and at restaurants and fast-food establishments are provided.

In Part III, Solutions for Everyday Living, the author presents strategies for managing eating on the run, eating for health promotion, sensible supplement choices, fueling athletes and fitness enthusiasts, and quick and healthy food choices for kids, teens, and busy families. A table displaying nutrition recommendations by national and international organizations shows readers the consensus among experts regarding nutrition guidelines for health promotion and disease prevention. The section on fueling for sports and fitness is especially well written and up-to-date.

Part IV, Quick and Tasty Meals, describes how to organize a kitchen, shop for food efficiently, survive the holidays, and cook tasteful meals that

are quick and easy to prepare. The section devoted to "60-Second Specials" provides a wide variety of foods that can be prepared within a minute, and is based on the premise that everyone has at least 60 seconds to prepare healthful foods.

Appendix A contains an extensive nutrient chart of fast foods. Appendix B lists nutrition resources and their Web sites. A bibliography of credible sources is included.

Eating on the Run is a quick read and a welcome resource that focuses on the skills and tools needed for busy people to fuel themselves in a hurry. The book has an attractive layout and is written in a straightforward, inviting style that beckons readers to eat healthfully, even when pressed for time.

Reviewed by Patti Steinmuller, MS, RD, adjunct instructor in food and nutrition, Montana State University, Bozeman, Montana, where she teaches nutrition for fitness and performance.



by Suzanne Girard Eberle, MS, RD

■ Several SCAN members appeared on the 2004 ADA National and House of Delegates ballots and deserve our thanks for their leadership and dedication. Appearing on the ballots were: **Rebecca Reeves, DrPH, RD, FADA**; **Martin Yadrick, MS, MBA, RD, FADA**; **Cecilia P. Fileti, MS, RD, FADA**; **Connie Deikman, MEd, RD, FADA**; **Denice Ferko-Adams, MPH, RD**; **Alana Cline, PhD, RD**; **Jenna Bell-Wilson, MS, RD**; **Paul Cotton, PhD, RD**; **Linda Hofmeister, MM, RD, FADA**; and **Charlene Hamilton, PhD, RD, FADA**. Election results were not available at press time of *SCAN'S PULSE*.

■ Lieutenant Commander **Connie Todd, RD**, head of the Nutrition Management Department at the Naval Hospital Pensacola, was the only Navy dietitian deployed during Operation Iraqi Freedom to serve inside the country of Iraq. Todd served as both dietitian and foodservice officer in the Fleet Hospital.

■ Congratulations to two SCAN members—**Mary Jane Lee, MA, RD**, and **Aieko Nakamura, RD**—who recently became Fifty Year Members of ADA.

■ **Karin Kratina, PhD, MPE, RD**, was appointed to the editorial advisory board of the *Journal of Health*

at Every Size in September 2003, and the second edition of her book, *Moving Away from Diets: Healing Eating Problems and Exercise Resistance* (Helm Publishing), was released in October. Also in 2003 Kratina received her PhD in cognitive anthropology from the University of Florida.

■ **Suzanne Girard Eberle, MS, RD**, was selected to speak at the 11th Hongkong Bank Foundation Elite Coaches Seminar with Coaching Directors Forum held in Hong Kong in December 2003. Girard Eberle gave two presentations on developments in American sports nutrition education to Hong Kong and Chinese coaches from different sports and to

upper-level coaching directors from various countries.



OF FURTHER INTEREST

■ **The Nutrition Twins™ Tammy Lakatos Shames, RD, CDN, CPT, and Lyssie Lakatos, RD, CDN, CPT,** appeared on the December 2003 cover of *Woman's World* magazine. They also recently provided nutrition counseling for brides in the Discovery Health Channel's "Buff Brides" series. Their new book, *Fire Up Your Metabolism: 9 Proven Principles for Burning Fat and Losing Weight Forever* (Simon + Shuster) was released in February 2004.

■ **Josephine Connolly, MS, RD,** has established, over the past two years, a nutrition division within Stony Brook University Medical School (Stony Brook, NY) that includes a unique model of co-training medical residents and dietetic interns. Connolly is currently conducting obesity research supported by both the Stony Brook University-funded National Institutes of Health General Clinical Research Center and the New York State Department of Health.

■ **Doug Kalman, MS, RD, FACN,** appeared on "CBS National News" with Dan Rather in October 2003. Kalman was one of several experts interviewed about the designer steroid tetrahydrogestinone (THG) and BALCO Labs. BALCO Labs, a California-based company selling nutrition supplements, has been targeted in a growing steroid scandal that resulted in federal subpoenas for several prominent athletes.

SCAN wants to hear from you! If you or a SCAN colleague has received an award or honor, enjoyed media attention for a recent work, or have an accomplishment to share with other members, please contact Suzanne Girard Eberle, MS, RD, at ebcruz@aol.com or 503/223-5243.

■ Proposed Practice-Based Research Network

If you feel high-level academic research doesn't adequately address the needs of everyday dietetics practice, you may be interested in helping to create a new practice-related research network. Dietetics professionals who would like to help direct research that is meaningful for dietetics practice are welcome to join this effort. If there is sufficient interest among practitioners for the proposed ADA Dietetics Practice-Based Research Network, the project will move to the planning stages. Those interested in getting involved with creating this network should complete the enrollment form at www.eatright.org/dr/p. For more information on the Dietetics Practice-Based Research Network, read "Practice-based Research Networks: An Opportunity for Dietetics Professionals," in the *Journal of the American Dietetic Association*, May 2003, pages 626-632.

■ JCAHO's New "Do Not Use" List

To assist in implementing the goal of improving the effectiveness of communication among caregivers (National Patient Safety Goal #2), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued in November 2003 its long-awaited list of "do not use" abbreviations, acronyms, and symbols. Accompanying the list are frequently-asked questions (FAQs). The list and FAQs can be accessed at www.jcaho.org/accredited+organizations/patient+safety/04+npsg/04_faqs.htm.

■ SCAN's Sports Nutrition Manual (4th Edition) and CD

The 4th edition of the successful, SCAN-sponsored *Sports Nutrition: A Guide for the Professional Working with Active People*, is now in development under the editorship of Marie Dunforth, PhD, RD, retired professor

of nutrition at California State University, in Fresno.

Based on feedback from reviewers, the manual's new edition will be shortened and organized into four sections: Nutrient and Fluid Needs of Active People; Assessment of the Body's Response to Physical Activity; Sports Nutrition Guidelines for Special Population Groups; and Sports-Specific Guidelines. A companion CD, developed by Chris Rosenbloom, PhD, RD, will present practice tips for the sports nutritionist, including worksheets on calculating energy and macronutrient needs of athletes and sports-specific handouts for use in counseling athletes. The 4th edition and companion CD are scheduled for release in Spring 2005.

■ New Journal on HAES

Information relating to research, theory, and practice that supports the Health at Every Size (HAES) movement is the focus of a new publication, *The Journal of Health at Every Size*. The bimonthly journal features original articles from HAES leaders, analyses on the latest research from a HAES perspective, practical advice on implementing HAES approaches, and more. For information, visit www.bcdecker.com.

■ 2004 International Congress of Dietetics in the U.S.

For the first time in 20 years, ADA and the Dietitians of Canada will host the International Congress in Dietetics (ICD) in North America. The 14th ICD will be held May 28-31, 2004, in Chicago. ICD will bring together some 5,000 food and nutrition practitioners, educators, researchers, and policymakers from more than 30 countries to address global perspectives toward building healthy communities, ensuring food security, nutrition strategies for new epidemics, and related topics. For information, visit www.internationaldietetics.org.





UPCOMING EVENTS

April 16-18, 2004

SCAN Symposium: "Cardiovascular Disease and Obesity: Optimizing Lifestyle Therapies," Colorado Springs. For information: SCAN Office, 719/635-6005, www.scandpg.org.

April 29-May 2, 2004

International Conference on Eating Disorders, Orlando. For information: Academy for Eating Disorders, 703/556-9222, www.aedweb.org.

April 29-30

"Steps to a Healthier US," 2nd Annual Summit, Baltimore. For information: US Department of Health and Human Services, www.healthierus.gov/steps.

June 2-5, 2004

American College of Sports Medicine, 51st Annual Meeting, Indianapolis. For information: American College of Sports Medicine, 317/637-9200, www.acsm.org.

June 18-19

International Association of Sport Nutrition, 1st Annual Conference, Las Vegas. For information: www.sportsnutritionssociety.org.

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