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Intuitive Eating: Research Update

by Evelyn Tribole, MS, RDN

In 1995, Elyse Resch and I developed the Intuitive Eating (IE) model to help move consumers away from the hazards of dieting.¹ Our model was informed by both evidence-based studies and our clinical experience working with patients. While the hazards of dieting had been well-documented at that time, a body of research continues to show the profundity of harm associated with dieting, including increased risk of eating disorders (EDs), binge eating, weight gain, food preoccupation, body dissatisfaction, and weight stigma, as well as poor psychological health, such as depression and anxiety.² Today there is robust research on IE, with more than 70 published studies showing benefits and providing growing recognition that IE is a healthy adaptive eating style that may aid in positive psychological and physical well-being.³ This article presents a brief summary of the research and implications.

What Is Intuitive Eating?

Intuitive Eating, an evidence-based model, is a dynamic integration between mind and body via 10 principles (Table 1, page 4) that work by either cultivating or removing obstacles to body awareness, known as interoceptive awareness.

Interoceptive awareness is the ability to perceive physical sensations that arise from within the body; this awareness is a direct experience mediated by the right brain.⁴ Indeed, several studies show that Intuitive Eaters have higher interoceptive awareness.⁵ However, body awareness itself is only one part of the process. The way in which an individual values and responds to these body sensations is known as interoceptive responsiveness.⁶ This responsiveness, or attunement, to physical body sensations provides a person with a powerful portal to tap into for identifying his or her needs, including:

- *Emotional feelings.* Every emotion has a physical sensation.
- *States.* States such as sleepiness or having a full bladder have a physical sensation.
- *Biological eating cues.* Cues such as hunger and fullness have unique physical sensations.

Ultimately, IE is a personal process of honoring health by listening and responding to the direct messages of the body in order to meet physical and psychological needs. The challenge in today's dieting, clean eating, culture is that many people do not value, let alone trust, their body's sensations. Instead, they eat based on

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externality—i.e., eating according to rules and diet plans, which ultimately create confusion between mind and body.

Key Characteristics of Intuitive Eaters

In 2006, Tylka published a four-part seminal study on IE that evaluated health benefits in 1,260 female college students, and created and validated the Intuitive Eating Scale (IES).⁷ IES scores were negatively related to ED symptoms, body dissatisfaction, poor interoceptive awareness, pressure for thinness, and internalization of the thin ideal. High IES scores were associated with several indexes of well-being, including proactive coping, higher body satisfaction, and general life satisfaction. This scale was updated in 2013 and validated to include both men and women (2,600 college students); it has also been validated in other countries and in adolescents.⁷⁻¹¹ The most current IES is composed of four subscales. It is based on the 10 principles of Intuitive Eating, and ultimately reflects four key characteristics of Intuitive Eaters.⁸

1. Eating for physical rather than emotional reasons. Eating is based on satisfying hunger, rather than undertaken to escape emotions or self-soothe.

2. Presence of unconditional permission to eat. This reflects the ability to eat foods desired when hungry, as well as refusal to label foods as forbidden or bad. (Note that attunement is a vital aspect, as sometimes people mistakenly perceive this as an authorization to overeat.)

3. Reliance on hunger and satiety cues. Eating is based on internal hunger and satiety cues, and these cues are trusted to guide eating behavior.

4. Body-food choice congruence. This reflects the extent to which a person matches his or her food choices with the needs of the body.

Benefits of Intuitive Eating

A recent meta-analysis review of 24 studies published between 2006 and 2015 found that IE was associated with the following benefits:¹²

- Greater body appreciation and satisfaction
- Positive emotional functioning
- Greater life satisfaction
- Unconditional self-regard and optimism
- Psychological hardiness
- Greater motivation to exercise when focus is on enjoyment rather than guilt or appearance

Furthermore, IE was inversely related to disordered eating, dieting, poor interoceptive awareness, and internalization of thin ideal. Most of the research to date has been cross-sectional in nature and mostly limited to college-aged women. Prospective intervention studies are needed to verify the beneficial associations.

Another scholarly review evaluated the relationship between IE and health indicators, and found that IE was associated with improved blood pressure, blood lipids, and dietary intake.¹³ It is noteworthy that one of the earliest studies evaluated the health-related properties of Intuitive Eaters' food choices.¹⁴ People scoring high on Hawk's Intuitive Eating scale ate a more varied diet. It is important to note that Hawk's scale is different from the Tylka scale. Hawk's scale has four components: intrinsic eating (reflects eating based on inner body cues), extrinsic eating (reflects external triggers for eating such as mood and food availability), anti-dieting, and self-care (reflects taking care of the body).

Intuitive Eating and Recent Research

Eating Disorders

A recent study from Germany looked specifically at the relationship between IE and individuals who had a range of EDs.⁹ The results provided the first evidence of reduced IE

From The Editor

The Spice of Life

by Mark Kern, PhD, RD, Editor-in-Chief

From the title, you probably think the theme of this article is about zesty flavor, but actually it's about the variety of topics we've provided for you to read. I'm not sure why I'm always surprised when an issue covers such an assortment of subjects, but I am. It goes to show just how diverse and interdisciplinary SCAN and the fields of nutrition and dietetics are.

On the cover you'll find an excellent article by Evelyn Tribole, MS, RD that describes the current state of research on Intuitive Eating, which she helped to pioneer. Our free CPE article, written by Nancy Rodriguez, PhD, RD, CSSD, FACSM, discusses the importance of protein quality within dietary patterns of athletes. Later in these pages you will find a review from Sara Llamas-Moya, M.Sc., PhD on the roles of dairy products in affecting risk factors for cardiometabolic diseases. Finally, we have included extensive coverage of the recent Annual SCAN Symposium in "Conference Highlights," thanks to the hard work of our exceptional Highlights editor Nancy Clark, MS, RD and an assist from our very own Karen Wetherall, RD.

The array of information doesn't stop there, though. We also have a wide range of information in our "SCAN Notables," "Research Digest," "Reviews," and "Of Further Interest" sections. And since variety is considered the spice of life, I'm sure you'll feel like a seasoned professional after you've read this issue cover to cover.

scores in individuals with EDs and suggest that the IES could be a useful tool in monitoring recovery progress. This is consistent with other studies, which indicate promise for using IE in the prevention and treatment of EDs.^{7,8,15-18} Similarly, a new study on retired athletes indicates that IE may help reduce disordered eating and help athletes to relearn how to trust their bodies' signals about hunger and satiety once they leave their sport.¹⁹

Diabetes

Emerging research suggests that IE programs could be a valuable tool to improve glycemic control.^{20,21} In children and adolescents with type 1 diabetes mellitus, there was an inverse relationship between hemoglobin A1c and IE scores.²⁰ Intuitive Eating may have even more saliency for people with diabetes. This is because people with diabetes are at higher risk of developing EDs, and IE is associated with decreased risk of problematic eating.

Intervention Studies

There are limited intervention studies, but the results are promising. A

recent short-term study used a combination of IE with Acceptance and Commitment Therapy (ACT).²² ACT is a validated counseling process that cultivates psychological flexibility via mindfulness, based on a person's value system. Women who completed the 3-month intervention improved in the areas of binge eating, general mental health, psychological flexibility, and IE.

A 10-week worksite wellness intervention program combined IE and mindfulness to address problematic eating behaviors, which is an unin-

"Rather than focus on weight, the focus of IE is on cultivating healthy behaviors, period. Body weight is not a behavior."

tended consequence of many traditional worksite wellness programs.²³ The intervention group had improvements in body appreciation, IE, and problematic eating behaviors compared with the control group. Notably, weight and body mass index (BMI) were not used as indicators of success, because focus on these may trigger problematic eating.

Body Mass Index

The body mass index is fraught with problems because it does not accurately reflect health status.²⁴⁻²⁶ However, it is noteworthy that the majority of studies that have evaluated the relationship between BMI and IE have found a negative association.^{3,27-31} This is relevant for health practitioners who are concerned that letting people eat whatever food they desire (unconditional permission to eat) would lead to weight gain. It is important to remember that attunement is a vital part of this principle.

For some people, there may be a side effect of weight loss as a consequence of implementing the IE principles. However, given that IE is an internal-based process, the promo-

Table 1. Intuitive Eating Principles and Interoceptive Awareness

Improves Interoceptive Awareness

- *Honor your hunger.* Eat when you are biologically hungry.
- *Respect your fullness.* Stop eating when comfortably full—not too little and not too much.
- *Discover the satisfaction factor.* Aim for satisfaction when eating meals and snacks.
- *Exercise—feel the difference.* Discover enjoyable ways to move the body.

Removes Obstacles to Interoceptive Awareness

- *Reject the diet mentality.* Stop all forms of dieting, behaviorally and mentally.
- *Make peace with food.* No food is forbidden. Eat the foods you desire, based on attunement to hunger and fullness cues.
- *Challenge the food police.* Challenge the food rules, the root of which may originate from personal, family, and cultural mores and beliefs.
- *Honor your feelings without using food.* Cope with your emotions without using food.
- *Respect your body.* Your body deserves to be treated with dignity and respect, regardless of shape or size.
- *Honor your health with gentle nutrition.* Select foods that taste good, while making you feel well.

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tion of IE for weight loss may undermine and interfere with the process, because weight loss is external-based. A recent 3-year prospective study illustrates this problem. Women who were trying to lose weight had a reduction in their IES score at year 3 compared with baseline scores.³¹ Furthermore, these women had increased episodes of binge eating, which is consistent with a body of research linking dieting to binge eating behaviors.^{23,28}

Health at Every Size (HAES)

A plethora of research shows that focusing on body weight and weight loss is linked to diminished physical and psychological health.²⁶ Particularly problematic is weight cycling, a byproduct of repetitive dieting, where weight is lost and regained—and is associated with increased mortality and morbidity, some forms of cancer, loss of muscle tissue, chronic inflammation, hypertension, and osteoporotic fractures.²⁶ With the push for “healthy weights” in public health

policy, there has been an unintentional consequence of weight stigma, which in and of itself is a risk factor for diminished health.^{2,17,26} For these reasons, a growing number of scientists and health professionals are calling for a weight inclusive or HAES approach, which advocates for IE.^{2,26,28,32} Rather than focus on weight, the focus of IE is on cultivating healthy behaviors, period. Body weight is not a behavior.

Conclusion

A body of research indicates that IE is a promising and comprehensive approach to healthy eating with physical and psychological health benefits. For the health practitioner, it is a gratifying way to collaborate with patients to achieve sustainable healthy behaviors, while helping them become the expert of their own bodies. However, there are gaps in the research. In particular, there is a need for intervention studies in a variety of age groups and across socio-economic backgrounds and gender.

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“With the push for ‘healthy weights’ in public health policy, there has been an unintentional consequence of weight stigma, which in and of itself is a risk factor for diminished health.”^{2,17,26}

The Significance of Essential Amino Acid Density to Protein Quality: Considerations for Building Healthy Eating Patterns

by Nancy R. Rodriguez, PhD, RD, CSSD, FACSM

This article is approved by the Academy of Nutrition and Dietetics, an accredited Provider with the Commission on Dietetic Registration (CDR), for 1 continuing professional education unit (CPEU), level 1. To apply for free CPE credit, take the quiz on SCAN's Web site (www.scandpg.org/quiz/?id=91). Upon successful completion of the quiz, a Certificate of Completion will appear in your My Profile (under the heading, My History). The certificate may be downloaded or printed for your records.

Learning Objectives

After you have read this article, you will be able to:

- Discuss protein intake needs to maximize muscle protein synthesis in older versus younger adults following resistance exercise.
- Create daily meal patterns that simultaneously achieve the Dietary Reference Intake for protein and meet requirements for essential amino acids to optimize muscle protein synthesis.
- Discuss essential amino acid density and how consideration of this is useful in blending protein quantity and quality to meet recommended intakes.

The fundamental role of protein in building, maintaining, and repairing muscle is well recognized. Over the past decade, substantial evidence has documented the benefits of higher protein diets relating to weight management, cardiometabolic health, and the musculoskeletal system in support of healthy, active aging.¹ Registered dietitian nutritionists (RDNs) are in an ideal position to translate this science into practice by moving beyond the Recommended Dietary Allowance (RDA) when establishing protein intakes for clients that

will maximize the flexibility afforded by the Acceptable Macronutrient Distribution Range (AMDR) of protein (10%-35% of recommended energy intake) in diet design to elicit optimal health outcomes.

This article provides an overview of the basis for current protein requirements, focusing on considerations for essential amino acids (EAAs) and the flexibility provided by current Dietary Reference Intakes (DRIs) for dietary protein prescriptions; highlights the critical role of high-quality protein and its constituent essential amino acids to favorably impact muscle mass; and applies scientific findings on the role of protein quantity, quality, and timing/meal distribution to practice.

The RDA and AMDR for Protein

The premise of the RDA for protein is the provision of EAAs that are not made by the body and must be provided in the diet. These essential nutrients—in particular, the branched chain amino acid leucine—stimulate and support muscle protein synthesis. By definition, the RDA for adults of 0.8 g/kg is “an estimate of the *minimum* daily average dietary intake level that meets the nutrient requirements of nearly all (97%-98%) healthy individuals.”²

The AMDR reflects a range of intakes for a respective energy source that is associated with decreased risk of chronic diseases, as well as provides for a distinction between minimal versus optimal protein intakes. Of significance to practice is the flexibility the AMDR allows in diet design for personalizing recommended protein intakes, leveraging the latest evi-

dence that demonstrates benefits of consuming protein in amounts higher than the RDA.¹

Protein Quantity

Benefits of protein intakes higher than the RDA are well documented in athletes and routinely active individuals, in those interested in weight management, and in older adults.¹⁻⁷ These intakes range from 1 g/kg body weight to 2 g/kg body weight or 25% to 150% above the RDA, and they are well within the AMDR for protein of 10% to 35% of total energy intake. Recent publications showed these levels of dietary protein intake, whether from plant or animal sources, are associated with improvements in cardiometabolic health without impairing of kidney function.⁸ Moving beyond simply meeting requirements to a focus on positive health outcomes related to increased protein intake should motivate practitioners to move beyond the RDA in creating diet prescriptions.

Protein Quality

This discussion focuses on the critical role of EAAs in the context of protein requirements and recommended protein intakes for application to diet design by practitioners. Only EAAs are needed to stimulate muscle protein synthesis and achieve a positive net protein balance, the difference between protein synthesis and protein breakdown.⁹ In the framework of protein utilization by the body, a neutral or positive net protein balance is needed to maintain or increase lean body mass, respectively. Leucine, a branched chain amino acid, is a key EAA because it stimulates, or “triggers,” protein synthesis, thereby pro-

moting a positive net protein balance.¹⁰ Proteins that provide sufficient amounts of all of the EAAs are considered complete, high-quality proteins. In addition to the amount of total protein, practitioners should aim to ensure that the target of EAAs is met. This is most easily done through incorporating high-quality, complete proteins at each meal (i.e., lean meats, eggs, and dairy foods).

Protein Intake and Muscle Protein Synthesis

The body efficiently uses high-quality proteins. In fact, studies evaluating the effects of increased protein intake on skeletal muscle protein syn-

thesis and coworkers observed a greater MPS in older adults after resistance exercise with 35 g of whey compared with that noted with the 10 g and 20 g doses.¹⁴

Consideration for Protein Distribution

Translating research findings into evidence-based dietary guidance in support of health and performance can be an elusive endeavor. From a practical standpoint, the identification of the amount and type of dietary protein associated with maximizing muscle protein synthesis is significant. Creating daily meal patterns that achieve the DRI for protein

evening meal in a group of healthy adult men and women (mean age $\sim 37 \pm 3$ y). This tightly controlled diet intervention study documented acute (1 d) and chronic (7 d) muscle protein synthesis responses to the different protein intake patterns. Twenty-four hour muscle protein synthesis was lower when the dietary pattern for protein was back-loaded at dinner on days 1 and 7, showing a protein-specific benefit to muscle protein synthesis when intake of high-quality protein was distributed across meals, allowing for sufficient stimulation of muscle protein synthesis at each meal.¹⁷ Given that a certain synchronicity exists for protein synthesis and protein breakdown, and, therefore, net protein balance throughout the day, these findings suggest that there is potential for better preservation of muscle mass over time when high-quality protein (and, hence, essential amino acids) is habitually consumed across meals.

Essential Amino Acid Density

In total, the evidence lends itself to an innovative and practical concept for diet design: EAA density. RDNs routinely educate clients on the concepts of calorie and nutrient density when taking a “Foods First” approach to eating healthfully. Considering EAA density of foods has particular significance when the priority of a diet prescription is the provision of all essential nutrients while being mindful of calories. Considering EAA density is a reasonable approach to blending protein quantity and protein quality for achieving recommended protein and EAA intakes simultaneously.

This approach is novel, as well as elusive, given how the protein foods group is defined in the *Dietary Guidelines for Americans* (<http://health.gov/dietaryguidelines/2015/guidelines/>). In general, 1 oz of meat, poultry, or fish, 1 egg, 1/4 cup cooked beans, and 1 T peanut butter are considered 1 oz equivalents. However, the EAA content and, therefore, the protein quality of these equivalents is quite different. Furthermore, foods from

“Considering EAA density is a reasonable approach to blending protein quantity and protein quality for achieving recommended protein and EAA intakes simultaneously.”

thesis have almost exclusively used EAAs or intact high-quality protein sources (e.g., eggs, dairy, beef). Considerable research has been done to determine the quantity of protein needed to maximize muscle protein synthesis (MPS) at rest and after exercise. Two separate dose-response studies with egg and whey protein in young adults showed that 20 g of protein providing approximately 10 g EAAs maximized MPS following a bout of resistance exercise training.^{11,12}

More protein is needed in a single serving or meal to maximize the muscle protein synthesis response in older adults compared with their younger counterparts. When graded amounts of whey were fed at rest and following a bout of leg resistance exercise, older men needed 20 g and 40 g to maximize MPS at rest and post-exercise, respectively.¹³ Pen-

while simultaneously meeting EAAs requirements to optimize muscle protein synthesis is a realistic approach to applying science to practice. This can be done within the context of protein-centered meals.¹⁵

Paddon-Jones and Rasmussen first suggested a balanced approach to daily protein consumption in 2009.¹⁶ Noting that typical dietary protein intake patterns trended toward consuming the majority of protein in the dinner meal, a balanced approach to higher protein intakes was considered given that consumption of ~ 25 g to 30 g of high-quality protein could maximally stimulate muscle protein synthesis.¹⁶ Taking a commonsense approach, Mamerow et al¹⁷ evaluated whether spreading protein consumption throughout meals during the day would have a protein-specific metabolic benefit compared with back-loading protein at the

Table 1: Protein and Essential Amino Acid (EAA) Content of Various Foods

Food	MyPlate Serving	EAA (g)	Leucine (g)	Protein (g)	Energy (kcal)
Greek yogurt (low-fat)	1 c	5.757	1.2	22.59	189.6
Cheddar cheese	1½ oz	3.971	0.825	9.73	172
Skinless chicken breast	1 oz (cooked)	3.928	0.711	9.48	53
Skim milk	1 c	3.793	0.782	8.26	83
Ground beef (93% lean)	1 oz (cooked)	2.95	0.582	7.47	43
Egg	1 each (large)	2.809	0.543	6.28	72
Salmon	1 oz (cooked)	2.654	0.509	6.26	58
Tofu	¼ c or ~2oz	2.061	0.442	5.01	47
Black beans	¼ c (cooked)	1.507	0.304	3.81	57
Peanut butter	1 T	1.012	0.244	3.51	94
Almonds	½ oz	0.923	0.217	3.11	85

Source of nutritional information: USDA National Nutrient Database for Standard Reference Release 28

Serving sizes for individual foods taken from www.choosemyplate.gov

other food groups (e.g., dairy products) can also be a source of high-quality protein. Using EAA requirements based on the RDA for adults and the nutrient content from the USDA National Nutrient Database for Standard Reference Release 28, 8 oz of milk provide approximately 22% of all EAA requirements and 1 oz of chicken breast or 1 egg provides approximately 17% of EAA requirements, whereas an equivalent serving of black beans (1/4 cup cooked) or peanut butter (1 T) provides approximately 9% and 6% of the EAA requirements, respectively.

In considering protein sources, making protein quantity and quality (EAA content) equitable across serving sizes of various protein foods and other food sources of protein has ramifications with regard to calorie intake. This concept is captured in Table 1. For example, a 3-oz chicken breast provides approximately 27 g

protein and 12 g EAA for 160 kcal. An equivalent amount of total protein (27 g) can be obtained with 1 ¾ cups of black beans, which provides 10.5 g EAA for about 400 kcal. In brief, complete, high-quality proteins allow for sensible diet design when constructing lower-calorie diets, because more essential amino acids are provided for fewer calories compared with lower-quality protein foods.

Summary and Recommendations

Protein quantity does not necessarily equate to protein quality, because all protein sources are not equivalent sources of EAAs. The RDA sets the minimal amount of dietary protein for most healthy adults to prevent deficiency, and it is based on nitrogen balance, not on functional outcomes. Furthermore, there is no edict for the RDA as an amount that is commensurate with health outcomes associated

with reduced disease risk. Current evidence suggests that most healthy people require dietary protein intake ≥ 1.0 g/kg/d to prevent muscle loss and for benefits specific to cardiometabolic and musculoskeletal health. Given that maximal muscle protein synthesis is achieved with ~ 20 g to 30 g protein per meal and an EAA target of ~ 10 g to 15 g per meal, a typical 70-kg to 80-kg person would consume 1.1 g protein/kg/d to 1.3 g protein/kg/d if distributed across three meals/day. For many athletes and clients, a feasible intervention is to prioritize protein intake in breakfast and snacks. For meal plans, RDNs who implement this approach in diet design will need to evaluate protein sources with specific regard for EAA content when integrating protein quality into the evaluation of essential nutrient content of meal plans and meal patterns.

Nancy Rodriguez is a professor of nutritional sciences with joint appointments in the Departments of Kinesiology and Allied Health Sciences at the University of Connecticut. She is director of sports nutrition services in the Division of Athletics and coordinates the undergraduate minor for nutrition for exercise and sport.

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Can Dairy Products Play a Role in Cardiometabolic Health?

by Sara Llamas-Moya, PhD, MSc

Cardiometabolic syndrome has been defined as an array of maladaptive cardiovascular, renal, metabolic, prothrombotic, and inflammatory abnormalities affecting humans.¹ A major outcome of this syndrome is a significant increase in cardiovascular disease (CVD) and associated morbidity and mortality. Globally, 31% of all deaths are associated with CVD, more than any other cause.²

Several risk factors have been associated with CVD (Table 1). Diet is a risk factor that has not only a direct impact on CVD prevalence, but also an indirect impact through its effect on blood pressure (i.e., hypertension), body weight (e.g., obesity), diabetes, and blood lipid concentrations (e.g., serum cholesterol).³

Over a number of decades, dairy products have been the focus of many research studies to identify a potential dietary role in influencing the prevalence of cardiometabolic syndrome in humans. Naturally, the fat present in dairy products is predominantly saturated, which has played a detrimental role in the popularity of this food category in CVD prevention diets. This position has been challenged by the scientific community, as the evidence is mainly based on prospective studies and not randomized controlled trials (RCTs),⁴ and results have not been consistent even in controlled intervention studies.⁵ The accuracy of using total cholesterol as a biomarker of CVD has also been questioned, and it is now

accepted that low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol fractions are the most suitable biomarkers of CVD.⁶ This article aims to review the current knowledge of the impact of dairy products on risk factors for and the incidence of CVD in humans.

Impact of Dairy Fat on Cardiovascular Health

Dietary recommendations have long focused on reducing saturated fat in the diet to reduce CVD risk. However, studies have shown that the source of saturated fat is important in CVD development. In 1976, the Nurses' Health Study concluded that the consumption of high-fat dairy products contributed to a higher occurrence of

CVD.¹¹ This message still influences many dietary interventions, despite some distinct limitations to the study, particularly the fact that the relative contribution of dairy food and beef to the saturated fatty acid (SFA) intake among study participants was 15% and 23%, respectively.¹² The Multi-Ethnic Study of Atherosclerosis (MESA) evaluated the effect of energy-adjusted consumption of SFA from butter, plant, meat, or dairy origin on the prevalence of CVD over a period of 10 years in approximately 7,000 CVD-free adults.¹³ The results showed that consumption of SFA from red meat, but not dairy products, led to a higher risk of CVD. In fact, SFA from dairy products had an inverse association with CVD development.

To date, the largest meta-analysis investigating the role of dairy intake in cardiometabolic syndrome prevalence showed that the highest consumption of dairy foods reduced the risk of all-cause deaths, ischaemic heart disease, stroke, and diabetes.⁷ A subsequent meta-analysis quantified the dose-effect of dairy intake on CVD risk as being 6% lower per every 200 ml/day intake.⁸ The current hypothesis is that dairy products may, in fact, have a protective role against CVD. There is a general recognition of the functionality of various milk fractions, including dairy fat, proteins, and micro ingredients.

Why would those with the highest intake of dairy foods have a lower risk of CVD when dairy foods are so high in saturated fat? Whole milk contains approximately 3.9% fat, of which 64% is saturated.⁹ Palmitic, stearic, myristic, and lauric acids are the predominant SFAs. It is now accepted that the effect of each of these SFAs on blood lipids is different in terms of the response and its magnitude,¹⁰ and therefore, total SFA content of foods does not accurately reflect a potential impact on serum cholesterol concentrations. Dairy fat also contains a significant proportion of monounsaturated fatty acids (MUFA), mainly oleic acid, which supports heart-healthy diets. The presence of other

Table 1. Risk Factors for Cardiovascular Disease³

- Hypertension
- Obesity
- Diabetes
- Lack of exercise
- Smoking
- Alcohol consumption
- Serum cholesterol
- Diet

functionally active fatty acids, such as conjugated linoleic acid (CLA), cannot be ignored.

Impact of Different Dairy Foods

Although the Dietary Approaches to Stop Hypertension (DASH) recommendations include choosing low-fat dairy products in an attempt to reduce other risk factors associated with CVD, it needs to be noted that the offering of dairy products available to the general population has evolved and diversified since the Nurses' Health Study. For example, in the United States, the consumption of full-fat milk in 1970 accounted for 83% of total milk intake. By 1990, only 41% of milk consumed was full-fat milk. This has been reflected in several investigations where certain dairy products have been shown to have a specific protective role against CVD. Of particular relevance is the Netherlands Cohort Study (NLCS), which investigated more than 120,000 individuals for 10 years.¹⁴ This study reported no association between total dairy product consumption and stroke mortality, and only a small increase in the risk of CVD in women, which was associated with butter and dairy fat consumption. The study also highlighted a potential protective role of fermented dairy products, such as full-fat yogurts. In agreement with the NLCS, the Malmo diet and cancer cohort investigation reported that overall consumption of dairy products tended to be associated with a lower risk of CVD.¹⁵ Similarly, fermented milk was, in particular, associated with lower risk of CVD.

As evidence on the protective role of fermented milk products continues to mount, scientists have hypothesized that these products may contain specific biopeptides that can directly influence blood lipid concentrations such as HDL and LDL cholesterol.¹⁶ Concomitantly, fermented milk consumption may directly influence the microbial population in the colon, which may improve cholesterol metabolism.¹⁷

A prospective trial based on the Oslo Health Study investigated the effect of the frequency of cheese intake in a population exceeding 18,000 men and women.¹⁸ The authors reported a positive correlation between frequency of cheese intake and serum HDL cholesterol levels. In addition, there was a negative correlation on serum triglyceride (TAG) concentrations. Overall, the authors observed a general trend for lower metabolic syndrome risk score with higher frequency of cheese consumption in men and women and across all ages investigated. However, a key limitation of this study is the lack of records on actual intake of cheese; rather, only frequency of intake was recorded.

Dairy Protein and Bioactive Peptides

Dairy products are also rich in protein. Milk, for example, contains more than 3% protein,⁹ fractionated into casein and whey proteins, quantified in 80% and 20% of total protein, respectively. Whey proteins have been the object of investigation, particularly in relation to hypertension, another risk factor for CVD.¹⁹ It is now accepted that fermentation of milk results in the formation of specific tripeptides, which can reduce hypertension risk via inhibition of angiotensin I-converting enzyme (ACE) activity. These tripeptides are collectively known as lactokinins and caseokinins, when derived from whey and casein, respectively. Fitzgerald and colleagues²⁰ reviewed the mode of action of these hypotensive biopeptides and highlighted a significant impact of these on both diastolic and systolic blood pressure. In a

more recent RCT (placebo-controlled, double-blind, crossover design) evaluating the effects of consuming two capsules per day (containing two milk protein hydrolysates formulations rich in the casokinin isoleucine-proline-proline [IPP]), the results showed that this tripeptide had a positive impact on both systolic and diastolic blood pressure, but only in

the role of calcium on blood pressure.²⁵ The authors indicated that an average supplementation of 1,200 mg/day of calcium reduced systolic and diastolic blood pressure by 1.86 mm Hg and 0.99 mm Hg, respectively. The effect of calcium supplementation on blood pressure was more marked in individuals with a low calcium intake (<800 mg/d).

ing evidence is not sufficient and, therefore, the role of vitamin D and enriched dairy products needs to be further elucidated.

Conclusions

The main finding of this review is that the link between saturated fat from dairy and cardiovascular disease is not as well defined as some dietary guidelines describe. In fact, current views support a protective role of dairy foods on blood lipid metabolism and blood pressure. Functional ingredients, such as dairy biopeptides, are being credited for their benefits on health. Overall, this suggests that it is important to consider the role of dairy foods as a whole in the diet, rather than a specific nutrient like total saturated fat, and that room should be given to dairy foods at our table.

Sara Llamas Moya, PhD, MSc, is the global applications manager for Animal and Pet Nutrition at Kerry, where she is responsible for conducting clinical efficacy trials in target animal species and creating a scientific understanding of the technologies' modes of action, from a nutrition and health perspective.

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“In agreement with the NLCS, the Malmo diet and cancer cohort investigation reported that overall consumption of dairy products tended to be associated with a lower risk of CVD.”¹⁵

subjects with stage 1 hypertension.¹⁶

This effect of dairy tripeptides—IPP and valine-proline-proline (VPP)—on systolic blood pressure reduction has been confirmed in both Asian and European populations by independent meta-analysis.^{21,22} However, the authors of these studies reported that age was an influential factor, with the effectiveness of the tripeptides decreasing with increasing age.

The Power of Dairy Micronutrients

Dairy products are also naturally rich in minerals and vitamins that have key protective roles in cardiometabolic syndrome, particularly calcium, potassium, and magnesium, as well as vitamin D. It has been estimated that dairy foods contribute to 50% of total calcium and more than 10% of total potassium and magnesium dietary intake in Western diets.²³

Calcium has been known to have a direct impact on blood pressure through its effects on vascular smooth tissue.²⁴ A meta-analysis of 40 RCTs on calcium supplementation has provided substantial evidence on

More recently, a RCT with a 2 x 2 factorial experimental design investigated the effect of low/high calcium levels and low/high energy derived from dairy fat.²⁶ The results highlighted that high dairy fat, irrespective of the level of calcium, increased total blood cholesterol, as well as LDL and HDL cholesterol. On the other hand, high calcium intake reduced total cholesterol and LDL cholesterol. These results suggest a possible counteracting effect of calcium on the effect induced by high dairy fat consumption on blood lipids. It has been suggested that these counter effects may be mediated by the influence of calcium on the absorption of fat in the gut.²⁷

Vitamin D, which is added to many dairy foods through fortification, is also considered to have a possible protective role against cardiometabolic syndrome. There are possible mechanisms through which vitamin D may influence blood pressure.⁶ However, a recent review has indicated that the majority of studies on vitamin D are confounded by its interaction with calcium metabolism.²⁸ The authors concluded that the exist-

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From The Chair

Welcome to a New Year with SCAN!

by Cheryl Toner, MS, RDN

As I write this, I have just returned from the 33rd Annual SCAN Symposium, *Syncing Nutrition Science and Practice*, held in Charlotte, NC. What made this amazing conference possible? Sixteen months of work were dedicated by the Symposium Committee, Events team, and SCAN Office. This was the first SCAN event organized with the help of SCAN's new and highly capable Executive Director, Tom Coté. Welcome, Tom! The Executive and Symposium Committees and numerous SCAN professional and student volunteers hosted speakers, shared the SCAN story at the Member Café, hosted "Dine Around with SCAN" groups, stuffed tote bags, presented posters, reviewed and judged posters, took pictures, tweeted, and more. Our sponsors and exhibitors brought their latest and greatest products, news, and science to share, and also provided support for the program, fitness activities, and our fabulous reception.

Over a delicious meal at "Dine Around with SCAN" on Saturday night, I met two members who were attending their first Symposium. Sharing ideas and getting to know each other, I was reminded that while we go to Symposium to learn, we experience so much more. Symposium is also a SCAN "family reunion." We reconnect with old friends and make new connections, exchange ideas and formulate plans for future collaboration, and roll up our sleeves to do the work of SCAN. In fact, the 2018 Symposium Committee met in Charlotte to continue the work it had already begun in planning next year's Symposium in Keystone, CO! Symposium and SCAN are labors of love, though, so the work is fun and energizing!

At our Member Meeting, we heard from our Chair, Karen Collins, that SCAN has big plans for the coming year. In the interest of sustainability and after several years of debate and careful consideration, *PULSE* is going digital! We will be investing in an effective transition over the next few months that will give you the high-caliber content you are used to, as well as enhanced online usability. We are also in the process of integrating our three subunit newsletters into one, cultivating our ongoing efforts to balance the deep-dive approach with a broad awareness and understanding of the areas in which we do not practice day to day.

At the same time that we are refining our approach to providing resources and education, we are also thinking about the long view, especially ways that SCAN can support and

expand professional opportunities for members. To that end, I want to thank each of you who took the time to participate in one or more of the three SCAN surveys that have come your way over the past few months. Each set of data provided by members is being used to inform initiatives in SCAN's strategic plan. Some of our efforts include:

- Developing SCAN's brand of wellness, a focus area that cuts across all others but also is a specific practice for some. What do our members do in the wellness realm, and what should SCAN do to support them?
- Exploring multiple avenues for expanding sports RD opportunities in underserved or untapped arenas. Programming and partnerships, guided by member survey data and a member task force, are playing a key role in these efforts.
- Leveraging the deep expertise of SCAN members who work in disordered eating/eating disorders to provide support and resources to fellow SCAN members in identifying and ensuring appropriate care for people with eating disorders.

Our next face-to-face opportunity will be at the 2017 Food & Nutrition Conference & Exhibition™ (FNCE®), where we'll celebrate our Academy's centennial anniversary. I look forward to connecting with you there at SCAN's events, including the reception, which promises to be a memorable experience, and our two sessions on the program:

- *Fueling Teen Athletes: Unique Challenges and Winning Strategies*, presented by Christine Rosenbloom, PhD, RDN, CSSD, FAND and Anastasia Fischer, MD, FAAFP, FACSM
- *Putting Heart into Performance Nutrition for Collegiate Athletes*, presented by Jennifer Ketterly, MS, RD, CSSD and Caroline Mandel, MS, RD, CSSD, and moderated by Sharon Smalling, MPH, RD

I'm honored to serve as your Chair this year. Whether your SCAN participation is centered on attending events at FNCE®, reading *PULSE*, earning CPE units through webinars, volunteering to write a fact sheet for a subunit, serving on a task force or as a liaison to another organization, or leading a committee, thank you for being a part of the dynamic and enduring SCAN family.

Conference Highlights

2017 Annual SCAN Symposium

Charlotte, NC

March 31-April 2017

The 33rd Annual SCAN Symposium proved, as always, to be an information-packed 2.5 days filled with new ideas, current research, networking, and inspiration. Here are a few highlights of the topics discussed:

Exercise in Cardiometabolic Risk Management: New Perspectives

Presented by Ralph LaForge, MSc, from Duke University Medical Center, Durham, NC

■ Just getting up and moving for 5 minutes every hour for 7 hours a day equates to 35 minutes of activity and greatly reduces cardiometabolic risk (metabolic syndrome, prediabetes, diabetes, heart disease risk factors). A single bout of exercise generates health benefits similar to and often exceeding many medical therapies.

■ Exercise machines report total energy expenditure (TEE), which comprises resting metabolic rate (RMR) plus exercise expenditure, not just the cost of the exercise itself (TEE-RMR). Post-exercise energy conservation after an intensive exercise bout alters the overall total daily energy expenditure. Hence, exercisers who “eat by the numbers” can easily gain weight, particularly when energy conservation and energy compensation are not considered.

■ The accuracy of step counters varies from brand to brand. When one person wore five different trackers at the same time for the same amount of time (e.g., 12-18 h), the results ranged from 8,971 to 12,387 steps.

■ To determine the accuracy of a step counter, wear it on a 440-y track and calibrate it to your body while walking 4 laps (1 m) on the inside lane. The rule of thumb is 2,000 steps equate to a mile plus or minus ~200 steps, depending on your height. Physical *activity* is more important to assess and record than intensity in terms of cardiometabolic risk reduction. Hence, non-exercisers should not overlook the “gym within their house.” Activities such as folding laundry, vacuuming, and going up and down stairs all count toward improving health.

Diet in the Prevention and Treatment of Thyroid Disorders

Presented by Enette Larson-Meyer, PhD, RD, from University of Wyoming, Laramie

■ The thyroid regulates basal metabolism, heart rate, body temperature, carbohydrate and fat metabolism, serum calcium regulation, and gene expression.

■ An estimated 27 million Americans have thyroid disorders, half of which are thought to be undiagnosed. Thyroid-stimulating hormone (TSH) is the single most important diagnostic blood test; the normal reference range is 0.4-4.5 mIU/L. Both high normal and low normal values can be a sign of concern.

■ Risk factors for thyroid dysfunction include female sex, age, genetics, diabetes, celiac disease, stress, obesity, and poor diet. Symptoms include low energy, general fatigue, elevated cholesterol, weight gain, and mood swings.

■ Thyroid function is influenced by dietary intake and the body's status

of iodine, iron, zinc, selenium, vitamin D, and overall calories.

■ Iodine deficiency may be more common than we think, given that many people have traded iodized table salt for sea salt or other gourmet salts or have stopped adding iodized salt to their food.

■ A study showed that about 25% of vegetarians and 80% of vegans were iodine-deficient compared with 9% non-vegetarians. Iodine deficiency is also common in people with anorexia (Krajcovicova-Kudlackova M, et al. *Ann Nutr Metab.* 2003;47:183-185).

Helping Youth Athletes Put a Sports Nutrition Plan Into Practice

Presented by Heather Mangieri, MS, RD, in private practice, Pittsburgh, PA

■ The average onset of puberty occurs at age 11 in girls and age 13 in boys. We need to talk to teens to let them know about the changes that will be happening in their bodies.

■ The teenage brain is not mature. Teens can have temper tantrums, the same as 2-year-olds! Because teens do not always have the brain cell connections to make the best decisions, we need to guide them.

■ Male teenagers who are late bloomers commonly look to supplements to gain bulk. There is nothing legal that can help them.

■ Today's teenagers do not need a food plan that increases their already high levels of stress. Our job is to listen to teens, learn about their barriers that interfere with optimal fueling, problem-solve with them, and make our offices a “no judgment zone.”

Taking Your Nutrition Practice Into the Supermarket

Presented by Leah McGrath, RD, from Ingles Markets, Asheville, NC

■ Four top consumer fears regarding supermarket foods are bacterial contamination; pesticide and herbicide residues; hormones and antibiotics; and foods with ingredients from “GMO” crops that might contribute to health risks.

■ Today’s shoppers look for foods low in sodium and sugar, with no *trans* fats, and high in fiber.

■ The least important terms to consumers on the food label are gluten-free, calcium-fortified, antioxidant-rich, and certified organic.

■ Common myths that supermarket RDs help dispel include: healthy foods are found only on the store’s perimeter; processed foods are bad/inferior; organic foods are healthier; GMOs are unhealthy and dangerous; private label/store brands are inferior; and healthy food is time-consuming to cook.

Health, Performance, and Nutrition Considerations for Transgender Individuals

Presented by Deborah Clegg, PhD, from UCLA and Cedar-Sinai Medical Center, Los Angeles, CA

■ The word “sex” refers to our biology and whether we have XX or XY chromosomes. The word “gender” has to do with society’s view of masculinity and femininity.

■ Gender falls on a continuum with *Male* at one end, *Gay-Transgender-Lesbian* in the middle, and *Female* at the other end of the spectrum. Each of us falls somewhere on that spectrum.

■ Gender identity does not match biological sex at birth for an estimated 800,000 people in the United States (0.2%–0.3% of the population). Brain images of males differ from

those of females, as do brain images of lesbians and transgender people, with transgender brains more aligned with their desired gender than their natal sex.

■ Children know by the age of 2 or 3 years if they are not congruent with their bodies. A small boy might say “Mommy, I am a girl with a penis.”

■ Men who transition to being women (and receive estrogen) have more cardiovascular disease (CVD) than women. Yet, women in the general population have a lower risk than men for CVD.

■ Transgendered people might seek an RD to help with body image changes. A trans-female commonly wants to lose weight to look more feminine; the trans-male commonly wants to build muscle.

Muscle Health

Presented by Ed Coyle, PhD, from University of Texas—Austin

■ Muscle is not just the body’s engine that moves us around. Muscle is important to keep us healthy. Muscle takes up glucose and triglycerides from the blood, helping to reduce the risks of diabetes and heart disease.

■ Muscle interacts with nutrients. For example, pomegranate juice can accelerate recovery from resistance exercise and reduce weakness from delayed-onset muscle soreness.

■ Muscle loss due to inactivity and aging is unhealthy. About 10% to 15% of all-cause mortality is due to inactive muscles.

■ Prolonged sitting creates exercise resistance. One hour of running does not counter the negative effects of 14 hours of sedentary behavior on the previous day.

■ Doing 60 to 75 minutes a day of moderate-intensity exercise can ward off the health risks associated with inactive muscles.

High-Fat Diets for Athletes?

Presented by Louise Burke, PhD, from Australian Institute for Sport and Mary MacKillop Institute for Health Research, Australian Catholic University

■ We live in a world where opinions often count more than scientific facts, particularly regarding the role of carbohydrate in the sports diet.

■ A high-fat diet impairs the ability to utilize carbohydrates optimally. An athlete who goes on a low-carbohydrate diet requires about 5 days to adapt to optimize the muscle’s ability to burn fat. We don’t yet know how long it takes to reverse this process if the athlete resumes eating carbohydrates.

■ About 70% of the calories in a ketogenic diet are from fat. A ketogenic diet is *not* a high-protein diet. Excess protein converts to glucose and takes a person out of ketosis.

■ “Carbohydrates availability” is the term preferable to “high-carbohydrate diet.” The need to have carbohydrates available depends on the intensity of the exercise and the goals of the training session. A few training sessions per week with low carbohydrate availability can enhance “fat burning” without down-regulating carbohydrate utilization.

■ Training with carbohydrate trains the intestinal tract, in preparation for fueling for the competitive event.

■ Athletes in ketosis adapt to burning more fat, but this is a liability during intense exercise. Fat compared with carbohydrate requires more oxygen to generate adenosine triphosphate (ATP); this reduces energy efficiency.

■ Given that so many athletes rave about their high-fat diet, more research on this topic might be warranted.

Applying the Science Behind Prunes and Bone Health

Presented by Shirin Hooshmand, PhD, from San Diego State University, and Leslie Bonci, MPH, RD, nutrition consultant, Pittsburgh PA

- Prunes are high in antioxidants and other nutrients important for bone health, including vitamin K, zinc, magnesium, phosphorus, copper, and polyphenols. The polyphenols may be responsible for most of the bone health benefits.
- Prunes can prevent bone loss during the first year of menopause; their effect is similar to estrogen.
- Eating 5 to 6 prunes a day is as effective as eating 10 to 12 prunes (100 g) in slowing bone loss in postmenopausal women and improving bone density.
- Prunes are satiating. Research subjects ate less of other foods and did not gain weight—nor did they complain of intestinal distress.

Is Tea Better Than Water for Fluid Intake?

Presented by Lenore Arab, PhD, from UCLA School of Medicine, and Penny Clark, MS, RDN, CDN, from Connect Nutrition Group

- Tea, both black and green, is a source of dietary flavonoids, with green tea having a higher proportion of catechins and black tea having a higher proportion of thearubigins and theaflavins.
- Antioxidant (i.e., free radical scavenging) activity has long been proposed as the mechanism of action by which tea flavonoids may deliver health benefits. However, antioxidants have been shown to *not* protect cells from premature aging nor “support healthy aging.” Experts agree, though, that the flavonoids in tea most likely exert their health benefits via mechanisms other than antioxidant activity such as by decreasing inflammation, increasing

nitric oxide production, decreasing platelet aggregation, and improving vasodilation.

- Based on a meta-analysis including data from nine studies in five countries, drinking green or black tea can reduce stroke-related brain damage, as well as reduce the risk of stroke by 21% in humans.
- Drinking 3 to 4 cups of tea a day might reduce stroke, and maintain healthy endothelial function and blood vessel function in humans. Hence, dietetics practitioners should not leave tea behind when making healthy beverage recommendations.

- The health benefits of tea are provided at no caloric cost.

Integrating Academy Research Resources Into Sports, Cardiovascular, and Wellness Nutrition Practice

Presented by Rosa Hand, MS, RD and Martin Yadrick, MA, MBI, RD, from the AND Dietetics Practice-Based Research Network

- The Academy of Nutrition and Dietetics has developed a Health Informatics Infrastructure (ANDHII – www.andhii.org) to help dietitians and dietetic technicians use the Nutrition Care Process Terminology (NCPT) to collect de-identified client data to help prove outcomes. It is a free benefit for all credentialed dietetics practitioners; no research experience is needed.
- ANDHII is based on the NCPT so that each RD has flexibility to pick the appropriate assessments/outcomes for his/her individual clients/population.
- By tracking outcomes, you can prove the impact of your work, advance the profession, and improve patient’s access to care.
- Once the ANDHII system is learned, the average amount of time spent inputting data is only 3.5 minutes per client visit.

- While ideally RDs would track outcomes with each client, the Academy would be pleased if members inputted just one client visit a day—or even one a week. If all RDs participate, we could collect an amazing amount of data and be able to create best practice policies and prove our worth.

Dietary Application of Exposure Response and Prevention in Treating Eating Disorders

Presented by Julia Cassidy, RDN, MS, CEDRDS, from Center for Discovery, Lakewood, CA

- Exposure Response and Prevention (ERP) is a system designed to desensitize an individual to fears involving exposure to the feared object (in this case, food) without danger. ERT can help individuals to overcome anxiety.
- The strategy involves the following: 1) Have the client create a ranked list of foods that are stressful; 2) Start working with a low-ranked item by simply discussing the feared food; 3) Introduce the food into the environment (via a food collage or supermarket tour); 4) Interact with the food (touch, hold, or smell it); 5) Taste the food (just a bite). Allow the discomfort to build and peak, and to let it return to a place of tolerance. Engage self-soothing and calming techniques; and 6) Repeat exposures until the client is no longer anxious about eating the food.

A Team Approach to Transforming Food and Body Shame

Presented by Tammy Beasley, RDN, CEDRD, CSSD and Nicole Siegfried, PhD, CEDS, from Castlewood Treatment Centers, Birmingham, AL

- Shame is a soul-eating emotion that commonly drives eating disordered behavior. Guilt is defined as “I did something wrong”; shame takes it a further to “Who I am is wrong.” With shame comes the intensely painful

belief that the person is flawed and therefore unworthy of love and belonging.

■ Increased shame is associated with increased severity of eating disorder symptoms. Research suggests that treatment in the first 4 weeks that decreases shame leads to reduction in ED behaviors over 12 weeks, and that increases self-compassion leads to further reduction in shame over 12 weeks. Hence, the RD and therapist treatment team want to concentrate on ways to reduce food and body shame in first 4 weeks of treatment.

■ The antidote for shame is nonjudgmental empathy and self-compassion. RDs can teach shame-filled clients to approach body changes during recovery as ways the body is helping, not harming, them. The treatment team can use gradual body and food exposure hierarchy charts to reduce avoidant behaviors. Breaking small patterns can restore clients' confidence that change is possible. RDs want to use "safe language such as energy (instead of calories) and fuel (instead of food), and teach clients to practice gratitude. Clients need to learn how to see bodily changes and food changes through a neutral view of "curiosity," not judgment.

Gut Microbiota and Nutrition: Implications for Treating Anorexia Nervosa

Presented by Elaine Glenny, doctoral student in the Department of Nutrition, University of North Carolina (UNC), Chapel Hill

■ Patients with anorexia nervosa (AN) (either before or after refeeding) have lower microbial diversity compared with healthy individuals. Lower diversity can be associated with impaired mental and physical health.

■ In an inpatient study of three female AN patients, researchers analyzed stool samples throughout the stay (33-68 d) and observed patient-specific changes in the intestinal microbial communities over the course of treatment.

■ A future study is planned for fecal microbiota transplantation (FMT) in patients with severe, enduring AN. Patients will receive FMT capsules or placebo for 4 weeks. Blood and fecal matter will be analyzed before and after the 4-week treatment. The researchers will look at the treatment's safety (i.e., any adverse effects), tolerability, and outcomes related to any change in gastrointestinal function, anxiety, depression and eating disorder-related cognitions.

Strategies to Help Athletes with Amenorrhea Transform Food Fears Into Fertility

Presented by Nancy Clark, MS, RD, CSSD, sports nutritionist, Boston, MA, and Stephanie Buckler, Esq, former client with an eating disorder

■ Amenorrhea in athletes has been normalized in today's society. Although more than 100 eating disorder (ED) programs are in place to try to prevent eating disorders by increasing body acceptance and improving media literacy, health professionals need to take ED prevention to the next level by bringing it to policy makers. Two examples of ways to change social culture ("Yea, I don't have my period. I must be training hard enough and have gotten thin enough") is by making new policies such as requiring labeling on photo-shopped images of models and prohibiting minors from purchasing diet pills. Bryn Austin at Harvard School of Public Health has developed such a program: the Strategic Training Initiative for the Prevention of Eating Disorders (STRIPED).

■ Many women do not seem to mind if they have no menses—until they want to get pregnant. Infertility becomes a source of grief that is suffered in secrecy. An online support group for women with hypothalamic amenorrhea (HA) at noperiod-nowwhat.com has helped some 1,000 women to date learn how to overcome amenorrhea, compulsive exercise, and under-eating so that they are able to get pregnant. The keys to their success included consuming at least 2,500 kcals/day from all the food groups, especially "fertility foods" (full-fat avocado, nuts) and highly palatable foods (ice cream, pizza, burgers). These women did mostly low-intensity exercise (slow walks, easy yoga). Median time needed to get pregnant was 6 months.

■ Other helpful strategies included not weighing themselves; affirmations for triggering times; support from friends; replacing exercise with enjoyable activities; getting rid of small clothes; and buying new clothes that fit. The women also received hope from hearing stories about other women's recovery and learning that the recovery rate is high when women make needed changes.

Summarized by "Conference Highlights" editor Nancy Clark, MS, RD, CSSD, who has a private sports nutrition practice in the Boston-area and is author of Nancy Clark's Sports Nutrition Guidebook (www.NancyClarkRD.com), and Karen Wetherall MS, RDN, who is a senior lecturer and dietetic internship director at the University of Tennessee, Knoxville, and has a private practice working with clients with eating disorders and weight-related issues.

Reviews

Sports Nutrition for Young Triathletes

Bob Seebohar MS, RD, CSSD, CSCS
Fule4mance™, LLC
www.fuel4mance.com;
coachbob@fuel4mance.com
2014, softcover; 183 pp, \$19.95
ISBN 978-0-9842759-2-2

Completing three continuous endurance exercise disciplines takes courage, extreme mental toughness, and rigorous training. Triathlons are composed of swimming, cycling, and running over various distances. Triathletes compete for fastest overall time completion. It is important for young triathletes to understand the basics of what it takes to properly train for the sport as well as the role of nutrition in helping with this training. Bob Seebohar presents his perspective on how to teach nutritional strategies to support good health, growth, motivation, and sports performance in young triathletes. He provides personal examples from his own experience and adds scientifically-based information throughout the book to help the reader learn more about the human body and the importance of nutrition.

Each chapter builds upon one another and discusses specific ways to understand the importance of nutrition for a young triathlete. Focus on individualized nutrition is emphasized, along with the concept of needing proper nutrition for growth,

development, and preparing for physical demands as well as feeding the body required nutrients. Multiple visuals provide a simple way of learning, and tables and charts appropriately break down specific examples and promote understanding of the nutrients important to the athlete's life. For example, in Chapter 2 the author provides the reader with a table of serving sizes for grains, vegetables, and fruits that is a helpful visual tool for those trying to understand how

**“This book also offers
...guidelines for
parents and coaches
to help their young
triathlete create a
nutrition plan.”**

to create an individualized nutrition plan for triathletes. This book also offers tips and guidelines for parents and coaches to help their young triathlete create a nutrition plan.

In all, the book provides a comprehensive look at the foundation of nu-

trition concepts for creating a daily eating plan. It also presents an in-depth look at “periodizing” nutrition and timing meals and snacks more appropriately around training sessions and races. The educational outline of basic nutrition and appropriate meal planning is helpful not only to a young triathlete but also to anyone who is a mentor, coach, or parent of an aspiring triathlete. The book is filled with easy-to-read visuals, basic nutrition information, and recipes to help guide a young triathlete to successfully complete a triathlon.

Bob Seebohar is a registered dietitian, exercise physiologist, NSCA certified strength and conditioning specialist, USA Triathlon Level III elite coach, USA Triathlon Youth/Junior coach, and board certified specialist in sports dietetics. He has previously worked in collegiate sports nutrition as a consultant to Colorado State University and the University of Northern Colorado, and served as director of sports nutrition at the University of Florida. Seebohar has traveled to the 2008 Olympic Games as the sports dietitian for the US Olympic Team and the personal sports dietitian and exercise physiologist for the Olympic Triathlon Team.

*Reviewed by Kristina Morales, RD,
Healthcare Services Group, Inc, Orange
County, CA, and “Reviews” editor for
PULSE.*

Research Digest

Shared Genetics and Anorexia Nervosa, Major Depression, and Suicide

Thornton LM, Welch E, Munn-Chernoff MA, et al. Anorexia nervosa, major depression, and suicide attempts: shared genetic factors. *Suicide Life Threat Behav.* 2016;46:525-534.

Anorexia nervosa has the highest mortality rate of all psychiatric disorders, with suicide the leading cause of death in this population. This study explored the relationships between anorexia nervosa (AN), major depression disorder (MDD), and suicide attempts (SA), with the aim of clarifying the role of genetic and environmen-

tal factors. Data were collected from 6,899 monozygotic (MZ) and dizygotic (DZ) twin women (aged 20-47) in 2005 in the Swedish Twin Study of Adults: Genes and Environment (STAGE). Biometrical twin modeling was used to assess relative contributions of genetic and environmental factors. Prevalence of each disorder

was as follows: AN: 3.6% (n=245); MDD: 26.2% (n=1,659); and SA: 1.9% (n=128). Among the study participants, 226 women (3.3%) met criteria for both AN and MDD; 17 (0.2%) met criteria for AN and SA; and 90 (1.3%) met criteria for MDD and SA. Fifteen women had a lifetime history of all three conditions. Results indicated that genetic factors account for a liability to AN of 38% (95% confidence interval [CI]: 8%-53%); a liability to MDD of 44% (95% CI: 24%-50%); and a liability to SA of 58% (95% CI: 8%-78%). Unique environmental factors account for most of the remaining liability. The genetic correlations indicate some sharing of genetic risk factors for AN with MDD ($r_a=0.49$), for AN with SA ($r_a=0.52$), and for MDD with SA ($r_a=0.77$). This study suggests that common genetic factors may result in shared behaviors among these traits, and emphasizes the importance of screening for signs of suicide among individuals with AN.

Summarized by Christine Andrus, graduate student, Department of Nutrition and Integrative Physiology, Coordinated Master's Program Nutrition Education and Research Concentration, University of Utah, Salt Lake City, UT.

BMI, Total Body Fat, and Cardiovascular Disease Mortality

Ortega FB, Sui X, Lavie CJ, Blair SN. Body mass index, the most widely used but also widely criticized index: would a criterion standard measure of total body fat be a better predictor of cardiovascular disease mortality? *Mayo Clin Proc.* 2016;91:443-455.

Body mass index (BMI) is often used to estimate cardiovascular disease (CVD) mortality. However, overweight and class I obesity may also be associated with more favorable health outcomes when compared with normal-weight individuals. Therefore, this prospective epidemiologic investigation of 60,335 adult men and women examined whether an accurate measure of total body fat would be a better predictor of CVD mortality than body mass index (BMI). Ex-

cess body weight, excess body fat, and excess fat-free mass (FFM) were all examined to see which more strongly predicts CVD mortality and all-cause mortality. Participants were primarily white, well-educated professionals. All participants completed a detailed questionnaire and underwent clinical evaluation, including physical examination, fasting blood chemistry analyses, personal and family health history, body composition (assessed by hydrostatic weighing or by the sum of 7 skinfold thicknesses using standardized protocols), smoking and alcohol use, and

“Furthermore, fat mass index is a more informative measure of future CVD prognosis than percent body fat.”

maximal exercise treadmill test. Compared with a medium BMI (15th to 85th percentiles), a very high BMI (≥ 95 th percentile) was associated with a 2.7-fold higher risk of CVD mortality (95% confidence interval [CI]: 2.1-3.3). Compared with a medium fat-free mass index (FFMI: 15th to 85th percentiles), a very high FFMI (≥ 95 th percentile) was associated with a 2.2-fold higher risk of CVD mortality (95% CI: 1.7-2.7). These estimates were markedly smaller for FFM. This study suggests that the simple and low-cost measure of BMI can be a stronger predictor of CVD mortality than accurate measures of body composition. Furthermore, fat mass index is a more informative measure of future CVD prognosis than percent body fat.

Summarized by Julia Erbacher Wylie, MS, RDN, CSSD, assistant professor Salt

Lake Community College, Salt Lake City, UT.

Effect of DHA on Biomarker of Head Trauma in Football Players

Oliver J, Jones M, Kirk M, et al. Effect of docosahexaenoic acid on a biomarker of head trauma in American football. *Med Sci Sports Exerc.* 2016;48:974-982.

American football athletes are often exposed to head impacts that produce mechanical forces leading to axonal injury in the brain. Neurofilament light protein (NFL) is a biomarker for axonal injury in humans. Docosahexaenoic acid (DHA) supplementation is being considered as an intervention to protect against axonal damage. The objective of the study was to examine the effect of DHA supplementation on serum NFL in American football athletes. A randomized, double-blind, placebo-controlled, parallel design was used. National Collegiate Athletic Association (NCAA) Division I American football athletes (n=81) were randomly assigned to ingest an oil mixture of DHA (2, 4, or 6 g/d) or placebo over the course of one season (189 d). Blood samples were collected to determine serum NFL levels at baseline, off-season summer conditioning (57 d), pre-season camp (23 d), and throughout the competitive season (109 d). Serum NFL levels increased significantly over the duration of the season with the highest dosages of DHA ($P<.05$). Observed increases in serum NFL coincided with increases in contact hours and intensity. DHA supplementation increased plasma DHA from baseline in a dose-dependent manner. There was a small to moderate effect of DHA supplementation on NFL levels, suggesting that DHA is beneficial (effect size = 0.04-0.07). DHA supplementation may have a neuroprotective role in traumatic brain injury. Further studies are needed to explore DHA and its prophylactic use in American football players. This study emphasizes the importance of counseling football players to consume diets high in

DHA. Supplements were supplied by DSM Nutritional Products.

Summarized by Amy Loverin, graduate student, Department of Nutrition and Integrative Physiology, Coordinated Master's Program Sports Nutrition Concentration, Salt Lake City, Utah.

Protein with Carbohydrate Improves Endurance Performance

Rustad I, Sailer M, Cumming K, et al. Intake of protein plus carbohydrate during the first two hours after exhaustive cycling improves performance the following day. *PLOS One*. 2016;11:1-25.

Recovery following intense exercise has an impact on performance in multiday sporting events. While protein intake post-workout has been shown to increase protein synthesis and reduce protein degradation, the effects of protein with carbohydrate supplementation have been inconsistent with regard to next-day performance. Eight males participated in this double-blind, randomized, crossover study, each completing three cycling performance trials at 72% VO_2 max 24 hours after an exhaustive bout of cycling exercise consisting of 20-minute intervals at 72%

VO_2 max with 5-minute breaks until participants were unable to continue. A 6-day washout period was implemented between exercise tests. Three

“...a combined intake of protein and carbohydrate immediately following an exhaustive bout of exercise promotes recovery ...”

diet interventions (beverages) were given 2 hours immediately following exhaustive cycling sessions: non-caloric control (PLA), 1.2 g/kg/hour carbohydrate (CHO), and isocaloric 0.8 g/kg/hour carbohydrate with 0.4 g/kg/hour protein (CHO + PROT).

Time to exhaustion (TTE) in the performance trial was used to evaluate recovery from the previous exhaustive exercise. Nitrogen balance was also observed for 2 hours post-workout on the exhaustive day and during the performance test. Time to exhaustion with CHO+PROT was significantly higher than CHO alone (63.5 min \pm 4.4 vs 49.8 \pm 5.4 min, respectively; $P < .05$). Nitrogen balance was positive with CHO + PRO during the recovery period, but negative with CHO alone and PLA ($P < .05$). These findings support previous research demonstrating that a combined intake of protein and carbohydrate immediately following an exhaustive bout of exercise promotes recovery, resulting in improved performance the next day. Dietitians with clients preparing for endurance competitions should consider recommending carbohydrate with protein supplementation post-exercise to improve next-day performance. This study was funded by the Norwegian School of Sport Sciences.

Summarized by Alexander Racine, Department of Nutrition and Integrative Physiology, Coordinated Master's Program Sports Nutrition Concentration, University of Utah, Salt Lake City, UT.

SCAN Notables

by Traci Roberts

■ The following four award recipients were honored at the recent 2017 SCAN Symposium in Charlotte, NC:

• **Brenda Davy, PhD, RDN** was awarded the SCAN Achievement Award, which recognizes exceptional members who have played a significant role in the evolution of SCAN through both outstanding service to the organization and professional accomplishments in the field. Brenda is a professor in the Department of

Human Nutrition, Foods and Exercise at Virginia Tech. She conducts research investigating the role of diet and physical activity behaviors in the prevention and treatment of obesity and related comorbidities; beverage consumption and weight management; and dietary assessment methodologies. Brenda received her BS degree in nutrition in 1989 and MS degree in exercise physiology in 1992 from Virginia Tech, and her PhD degree in nutrition from Colorado State University in 2001. She is a Fellow of the American College of

Sports Medicine and The Obesity Society, and serves on the board of editors of the *Journal of the Academy of Nutrition and Dietetics*. Her research has been supported by the National Institutes of Health. Brenda has authored more than 90 peer-reviewed journal articles. At Virginia Tech, she directs the Laboratory for Eating Behaviors and Weight Management.

• **Kathleen Woolf, PhD, RD, FACSM** was awarded SCAN's 2017 Excellence in Practice Award for outstanding service and professional accomplish-

ments that have advanced her practice area. Her work focuses on the integrated role of nutrition and physical activity for lifelong health throughout the lifespan. She has expertise in the assessment of nutrition and physical activity patterns (sedentary behaviors, physical inactivity, and physical activity) in healthy individuals (recreational/competitive athletes) and individuals with chronic disease (musculoskeletal, skin, and kidney disorders). She has designed and implemented randomized clinical intervention trials and is a coinvestigator on a social cognitive theory-based behavioral intervention (diet, physical activity) using technology-based self-monitoring for patients with complex chronic disease. Kathleen has held leadership positions in the Academy of Nutrition and Dietetics at the local, state, and national levels. She is a member of the editorial boards of the *Journal of the Academy of Nutrition and Dietetics* and the *American College of Sports Medicine's Health and Fitness Journal*. She completed her BS degree in food and nutrition from Arizona State University (ASU) and her dietetic internship at the University of Iowa Hospitals and Clinics. She holds an MS degree in nutritional sciences from the University of California, Los Angeles and a PhD degree in exercise science from ASU.

• **Stella Lucia Volpe, PhD, RD, FACSM** was awarded the SCAN Distinguished Scholar Award. Stella is professor and chair of the Department of Nutrition Science at Drexel University, Philadelphia, PA. Her degrees are in both Nutrition and Exercise Physiology; she also is an ACSM Certified Clinical Exercise Physiologist® and a registered dietitian. Her research focuses on obesity and diabetes prevention through traditional interventions, mineral supplementation, and more recently, alteration of the environment to result in greater physical activity and healthful eating. Stella is an associate editor of ACSM's *Health & Fitness Journal®* and *Translational*

Journal of the American College of Sports Medicine. She is a competitive athlete in three sports: field hockey, ice hockey, and rowing. She has been doing CrossFit for nine years, and also competes in CrossFit competitions.

• **Ralph La Forge, MSc, FNLA, CLS** was awarded the SCAN Distinguished Ambassador Award. Ralph is a physiologist and Diplomate of the Accreditation Council for Clinical Lipidology, for which he is the immediate past president. He is also immediate past president of the Southeast Lipid Association. Ralph is a consultant to a number of health care and accountable care organizations on inaugurating systematic approaches to preventive endocrinology and managing lipid disorders. He is senior consultant to the U.S. Indian and Alaskan Health Service Division of Diabetes Treatment and Prevention. Ralph is on the teaching faculty at the University of North Carolina Chapel Hill Complementary and Integrative Medicine. He formerly was faculty and coordinated the Duke Lipid Disorder Physician Education Program at Duke University Medical Center, Division of Endocrinology, Metabolism and Nutrition.

■ **Alene Baronian, MS, RDN**, founder of Eat 2 Perform Inc., recently published her first book, *Creating Balance*. This is a self-reflective workbook to bring more energy, productivity, and balance into one's life. The book helps readers assess their readiness to put small changes in place, and walks them through various areas to make change: nutrition, movement, sleep habits, stress management, hydration habits, and more.

■ **Molly Kellogg, LCSW, CEDRD** announced a new advanced training for dietitians who work in disordered eating, "Internal Family Systems for Dietitians: Expanding the Toolkit of Behavior Change," which debuted in April and will be offered in various cities. Her Counseling Intensive, based on motivational interviewing,

Manuscripts for *PULSE* Welcomed

SCAN'S *PULSE* welcomes the submission of manuscripts to be considered for publication. In particular, *PULSE* is interested in receiving original research reports and review articles. Manuscripts presenting practical guidelines, case studies, and other information relevant to SCAN will also be considered.

Manuscripts must be prepared and submitted in accordance with *PULSE*'s Guidelines for Authors; only manuscripts that follow these guidelines will be considered. The Guidelines for Authors can be accessed at www.scan-dpg.org/nutrition-info/pulse/.

continues to be offered around the country. Free counseling tips and more learning opportunities can be accessed at www.mollykellogg.com.

■ **Melissa Joy Dobbins, MS, RDN, CDE** was selected by the Academy as the recipient for the 2016 Media Excellence Award. With more than 20 years of extensive media experience, Melissa has been a spokesperson for the health care, grocery, and food industries as well as a former Academy spokesperson and state media representative for Illinois. She has been praised for her media training workshops that empower and support other dietitians so they can gain more visibility, influence, and success.

If you have an accomplishment that you would like to be considered for an upcoming issue of PULSE, please contact Traci Roberts at fivespotjones@gmail.com.

of Further Interest

■ 2017 SCAN Election Results

SCAN members cast their votes earlier this year and elected the following:

Chair-Elect: Lindzi Sara Howder, MPH, MS, RDN, CSSD

Secretary: Sherri Stastny, PhD, RD, CSSD

Nominating Committee: Jackie Buell, PhD, RD and Allison Parker, MS, RD

■ News from Wellness/CV RDs Subunit

Here's an update on developments from the Wellness/CV RDs:

• **Wellness Task Force Update.** Thank you to everyone who joined the Wellness Task Force focus group session at the recent SCAN Symposium in Charlotte. Missed out? Don't worry—details from last year's survey and plans for the future will soon be available on the Wellness/CV RDs section of the SCAN website.

• **Using Our Fact Sheets in Your Practice?** If so, make sure you are providing clients with the most recent versions. These resources are continually updated to reflect the latest evidence-based practice information. You can locate these new versions at www.scandpg.org/cardiovascular/cardiovascular-health-fact-sheets/.

• **Interested in Coaching?** SCAN, along with representatives from other dietetics practice groups, has been involved in developing a Certificate of Training in Coaching. This fantastic educational opportunity will soon be available through the Commission on Dietetic Registration (CDR).

• **Let's Connect at FNCE®.** It was wonderful to connect with so many Wellness/CV dietitians at the 2017 Annual SCAN Symposium. We are eager to meet up again and hope to see you all in Chicago on October 21-

24 for the Academy's Centennial and Food & Nutrition Conference & Expo™ (FNCE®) event. Check the SCAN website and e-blasts for updates on SCAN-specific educational and networking sessions. Also see page 23 of this issue of *PULSE*.

■ News from Sports Dietetics—USA (SD-USA) Subunit

Below are some highlights from the SD-USA subunit:

• **Sports Nutrition: A Practice Manual for Professionals (6th edition).** Scheduled for release this June, the latest revised edition of this sports nutrition manual was written and reviewed by esteemed sports RDNs and other exercise experts. Highlights include a new chapter discussing emerging opportunities in sport nutrition, a completely revised overview of exercise physiology, strategies for sports nutrition assessment, updated population- and sport-specific recommendations, and more. The price is \$65 for Academy members, and free faculty preview copies are available for educators and program directors. Visit the Academy store at www.eatrightstore.org.

• **External Relations.** Did you know that SCAN has official partnerships with the National Athletic Trainers' Association (NATA) and the National Strength and Conditioning Association (NSCA)? If you are interested in growing these relationships, please contact the SCAN Office at info@scandpg.org.

• **Volunteer Opportunities.** SD-USA offers a wide range of volunteer opportunities—from editing and reviewing webinars and publications to working with the social media team. Sign up today at www.scandpg.org/volunteer-opportunities/.

• **Our Newest Fact Sheets.** Check out our latest fact sheets: *Athletes with Type 1 Diabetes*; *Nutrition to Optimize*

Immune Function; *Navigating Sports Nutrition Supplements*; and *Celiac Disease and Gluten Sensitivity in Athletes*. As always, they are free with your SCAN membership. Go to www.scandpg.org/sports-nutrition/sports-nutrition-fact-sheets/.

• Sports Nutrition Care

Manual® (SNCM). The Academy's online SNCM contains research-based nutrition information written primarily by SCAN members. The price is \$75 for Academy members. Preview the manual and selected pages at <http://sports.nutritioncaremanual.org/>.

■ News from DEED Subunit

Following are announcements from the Disordered Eating & Eating Disorders (DEED) subunit:

• **New Fact Sheets.** Coming soon: *Men and Eating Disorders*; *Mindfulness*; *Identifying ED*; and *Family-Based Therapy for ED Recovery*. You'll find our fact sheets at www.scandpg.org/fact-sheets/disordered-eating/.

• **Latest Webinar.** To be released shortly is our webinar on how to expose clients to fear foods. Take a look at SCAN's latest webinars on www.scandpg.org/store/default.aspx?search=Webinars.

• **Let's Hear from You!** We are always looking for new ideas for educational materials to produce. To share your thoughts and ideas contact the DEED director, Sarah Gleason RDN, CEDRD at sarah@sarahthedietitian.com.

■ "Informatics in Nutrition" Certificate of Training Program

Start improving your nutrition care today! Through an innovative blend of technology and information, nutrition informatics is increasingly vital to nutrition care across all areas of practice. The Academy is offering this

online program to enable nutrition professionals to apply the best informatics concepts to improve the care of those receiving a patient-centered, team approach to coordinated care.

The Level 2 program consists of five separate modules that build on each other:

- **Module 1** – provides an overview of informatics, resources, and tool at the Academy
- **Module 2** – discusses interoperability, patient-generated data, and protected health information, security, and ethics
- **Module 3** – covers communications in terms of current and future capabilities, including social media, telehealth, the Direct Project, and Blue Button
- **Module 4** – delves into nutrition in electronic health records and health information technology

Academy members enjoy a reduced rate of \$24 per module or may complete all five modules and earn 10 hours of CPEUs for \$120. For more information, go to www.eatrightpro.org/onlinelearning.

■ Gestational Diabetes Guideline Now Available

The Academy's Evidence Analysis Library (EAL) recently published the *Gestational Diabetes Evidence-Based Nutrition Practice Guideline and Supporting Systematic Reviews*. The guideline focuses on nutrition practice during the treatment of women with gestational diabetes mellitus. Among other highlights, the guideline includes 17 evidence-based nutrition recommendations covering each step of the Nutrition Care Process, as well as supporting systematic reviews addressing medical nutrition therapy, calories, macronutrients, dietary patterns, and meal and snack distributions. To view the new guidelines, which is free to all Academy members and EAL subscribers, visit www.andeal.org/gdm.

■ Call for Abstractors for "Research Digest"

The "Research Digest," which appears in each issue of *SCAN'S PULSE*, provides summaries of published papers relating to any of SCAN's practice areas: nutrition for sports and physical activity, cardiovascular health, wellness, and disordered eating and eating disorders.

You can contribute to the pages of *PULSE* by volunteering to abstract a recently published study on sports nutrition. For details on this opportunity, contact Stacie Wing-Gaia, PhD, RD, CSSD, co-editor of "Research Digest," at stacie.wing@health.utah.edu.

■ Guide for Healthy Eating During and After Pregnancy

The second edition of *Expect the Best: Your Guide to Healthy Eating Before, During, and After Pregnancy* by Elizabeth M. Ward, MS, RD is now available from the Academy. This text provides an updated, comprehensive guide for new and future parents that addresses nutrition and lifestyle habits, from preconception to post-delivery. The new edition translates the latest research and expert recommendations into clear, concise advice on how to have the healthiest baby possible. *Expect the Best* can be purchased for \$16.95 at www.eatrightSTORE.org.

■ Need a Good Resource? Try the Quality Resource Collection

With more than 100 different resources listed, the Quality Resource Collection serves to develop quality management knowledge and skills as a critical component of nutrition and dietetics practice. This collection, published by the Academy's Quality Management Committee, includes resources used in practice by the Quality Leader Alliance. The Quality Resource Collection can be accessed at www.eatrightpro.org/qualitystrategies.

See You at FNCE®!

October 21-24, Chicago

Come to the 2017 Food & Nutrition Conference & Expo™—and celebrate the Academy's Centennial! Here are some SCAN highlights won't want to miss:

SUNDAY

3:30 pm - 5:00 pm

Putting Heart Into Performance Nutrition for Collegiate Athletes

Presenters: Jennifer Ketterly, MS, RD, CSSD and Caroline Mandel, MS, RD, CSSD

MONDAY

9:00 am - Noon

SCAN Booth DPG/MIG Showcase

6:30 pm - 8:30 pm

SCAN Networking Reception

TUESDAY

8:00 am - 9:30 pm

SCAN Spotlight Session: Fueling Teen Athletes: Unique Challenges and Winning Strategies

Presenters: Christine Rosenbloom, PhD, RDN, CSSD, FAND and Anastasia Fischer, MD, FAAFP, FACSM

For more information and updates, be on the look-out for eblasts, and visit www.scandpg.org/fnce-2017/

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Upcoming Events

August 4-7, 2017

American Association of Diabetes Educators Annual Meeting, Indianapolis, IN. For information: AADE, www.diabeteseducator.org

October 7-10, 2017

AACVPR Annual Meeting, Charleston, SC. For information: American Association of Cardiovascular and Pulmonary Rehabilitation, www.aacvpr.org

October 21-24, 2017

2017 Food & Nutrition Conference & Expo™ (FNCE®)—Centennial Anniversary, Chicago, IL. For information: eatrightfnce.org. SCAN events at FNCE are detailed on page 23 of this issue of *PULSE*. For updates: www.scandpg.org/fnce-2017/

October 30-November 2, 2017

Obesity Week, Washington, DC. For information: American Society for Metabolic & Bariatric Surgery and The Obesity Society, www.obesity.org/meetings/obesity-week

November 10-12, 2017

Annual Renfrew Center Foundation Conference, Philadelphia, PA. For information: www.renfrew.org

May 4-6, 2018

Mark your calendar for the 34th Annual SCAN Symposium, *No Limits Nutrition: Extreme & Unique Practices*, Keystone, CO. More information to come.

SCAN'S PULSE

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Appropriate announcements are welcome. Deadline for the Winter 2017 issue: **Sept. 1, 2017**. Deadline for the Spring 2017 issue: **Dec. 1, 2017**. Manuscripts (original research, review articles, etc.) will be considered for publication. Guidelines for authors are available at www.scandpg.org. E-mail manuscript to the Editor-in-Chief; allow up to 6 weeks for a response.

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