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Nutrition Perspectives

University of California at Davis, Department of Nutrition and University of California Cooperative Extension

FDA Modernizes Nutrition Facts Label for Packaged Foods

The U.S. Food and Drug Administration took a major step in making sure consumers have updated nutritional information for most packaged foods sold in the United States, that will help people make informed decisions about the foods they eat and feed their families.

"I am thrilled that the FDA has finalized a new and improved Nutrition Facts label that will be on food products nationwide," said First Lady Michelle Obama. "This is going to make a real difference in providing families across the country the information they need to make healthy choices."

"For more than 20 years, Americans have relied on the Nutrition Facts label as a leading source of information regarding calories, fat and other nutrients to help them understand more about the foods they eat in a day," said FDA Commissioner Robert Califf, M.D. "The updated label makes improvements to this valuable resource so consumers can make more informed food choices – one of the most important steps a person can take to reduce the risk of heart disease and obesity."

Key Updates

The new Nutrition Facts label will include the following:

- An updated design to highlight "calories" and "servings," two important elements in making informed food choices.
- Requirements for serving sizes that more closely reflect the amounts of food that people currently eat. What and how much people eat and drink has changed since the last serving size requirements were published in 1993. By law, the Nutrition Labeling and Education Act, requires that serving sizes be based on what people actually eat.
- Declaration of grams and a percent daily value (%DV) for

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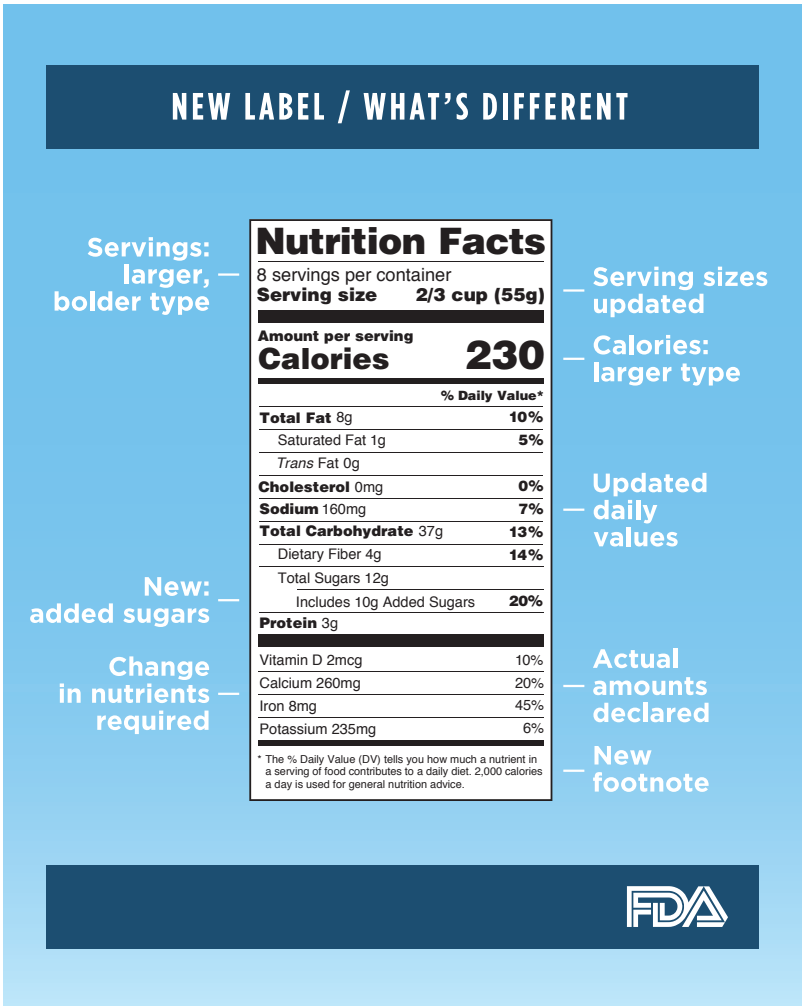

The updated Nutrition Facts label will be mandatory beginning July 26, 2018. For manufacturers with less than $10 million in annual food sales, the deadline is extended by an additional year. The Nutrition Facts label regulations apply to packaged foods except certain meat, poultry and processed egg products, which are regulated by the U.S. Department of Agriculture's Food Safety and Inspection Service.

Image by FDA, http://www.fda.gov/downloads/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/UCM501643.pdf

"added sugars" to help consumers know how much sugar has been added to the product. It is difficult to meet nutrient needs while staying within calorie limits if you consume more than 10 percent of your total daily calories from added sugars, and this is consistent with the scientific evidence supporting the 2015-2020 Dietary Guidelines for Americans.

- "Dual column" labels to indicate both "per serving" and "per package" calorie and nutrition information for certain multi-serving food products that could be consumed in one sitting or multiple sittings. Examples include a pint of ice cream and a 3-ounce bag of chips. With dual-column labels available, people will be able to easily understand how many calories and nutrients they are getting if they eat or drink the entire package/unit at one time.

- For packages that are between one and two servings, such as a 20 ounce soda, the calories and other nutrients will be required to be labeled as one serving because people typically consume it in one sitting.

- Updated daily values for nutrients like sodium, dietary fiber and vitamin D, consistent with Institute of Medicine recommendations and the 2015-2020 Dietary Guidelines for Americans. Daily values are reference amounts of nutrients

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Sheri Zidenberg-Cherr, Ph.D., Nutrition Specialist, Anna M. Jones, Ph.D., and staff prepare NUTRITION PERSPECTIVES. This newsletter is designed to provide research-based information on ongoing nutrition and food-related programs. It is published quarterly (four times annually) as a service of the UC Davis Department of Nutrition, the University of California Cooperative Extension and the United States Department of Agriculture. NUTRITION PERSPECTIVES is available online, free of charge, at http://nutrition.ucdavis.edu/perspectives. Questions or comments on articles may be addressed to: NUTRITION PERSPECTIVES, Department of Nutrition, University of California, Davis, CA 95616-8669. Phone:(530) 752-3387; FAX: (530) 752-8905.

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to consume or not to exceed and are used to calculate the %DV that manufacturers include on the label.

- Declaration of Vitamin D and potassium that will include the actual gram amount, in addition to the %DV. These are nutrients that some people are not getting enough of, which puts them at higher risk for chronic disease. The %DV for calcium and iron will continue to be required, along with the actual gram amount. Vitamins A and C will no longer be required because deficiencies of these vitamins are rare, but these nutrients can be included on a voluntary basis.

- "Calories from Fat" will be removed because research shows the type of fat is more important than the amount. "Total Fat," "Saturated Fat," and "Trans Fat" will continue to be required.

- An abbreviated footnote to better explain the %DV.

The FDA is also making minor changes to the Supplement Facts label found on dietary supplements to make it consistent with the Nutrition Facts label.

Most food manufacturers will be required to use the new label by July 26, 2018. Manufacturers with less than $10 million in annual food sales will have an additional year to comply with the new rules. The FDA plans to conduct outreach and education efforts on the new requirements.

The iconic Nutrition Facts label was introduced more than 20 years ago to help consumers make informed food choices and maintain healthy dietary practices. In March 2014, the FDA proposed two rules to update the label, and in July 2015, issued a supplemental proposed rule. The Nutrition Facts label regulations apply to packaged foods except certain meat, poultry and processed egg products, which are regulated by the U.S. Department of Agriculture's Food Safety and Inspection Service.

For more information, visit: http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm.

SIDE-BY-SIDE COMPARISON

Original Label

Nutrition Facts
Serving Size 2/3 cup (55g)
Servings Per Container About 8

Amount Per Serving

Calories 230	Calories from Fat 72
	% Daily Value*
Total Fat 8g	**12%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**12%**
Dietary Fiber 4g	**16%**
Sugars 1g	
Protein 3g	
Vitamin A	10%
Vitamin C	8%
Calcium	20%
Iron	45%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

New Label

Nutrition Facts
8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Note: The images above are meant for illustrative purposes to show how the new Nutrition Facts label might look compared to the old label. Both labels represent fictional products. When the original hypothetical label was developed in 2014 (the image on the left-hand side), added sugars was not yet proposed so the "original" label shows 1g of sugar as an example. The image created for the "new" label (shown on the right-hand side) lists 12g total sugar and 10g added sugar to give an example of how added sugars would be broken out with a % Daily Value.

Image by FDA, http://www.fda.gov/downloads/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/UCM501646.pdf

Source: FDA News and Events; May 20, 2016. http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm502182.htm

Improvement Seen In U.S. Diet, Although Disparities Persist in Quality by Race/Ethnicity, Education and Income

In nationally representative surveys conducted between 1999 and 2012, several improvements in self-reported dietary habits were identified, such as increased consumption of whole grains, with additional findings suggesting persistent or worsening disparities based on race/ethnicity and education and income level, according to a study appearing in *JAMA* (1).

Many aspects of the U.S. diet improved, including increased consumption of whole grains and fruit, and decreased consumption of sugar-sweetened beverages.

Suboptimal diet is among the leading causes of poor health, particularly obesity, diabetes, cardiovascular diseases, and diet-related cancers. In the United States, dietary factors are estimated to account for more than 650,000 deaths per year and 14 percent of all disability-adjusted life-years lost. Understanding trends in dietary habits is crucial to inform priorities and policies to improve diets and reduce diet-related illness. Dariush Mozaffarian, M.D., Dr.P.H., of the Tufts Friedman School of Nutrition Science and Policy, Boston, and colleagues examined trends in overall diet quality and multiple dietary components related to major diseases using 24-hour dietary recalls in nationally representative samples that included 33,932 U.S. adults age 20 years or older from 7 National Health and Nutrition Examination Survey (NHANES) cycles (1999-2012). As a summary indicator, a diet score was constructed based on the American Heart Association (AHA) 2020 Strategic Impact Goals for diet.

The researchers found that many aspects of the U.S. diet improved, including increased consumption of whole grains, nuts or seeds, a slight increase in fish and shellfish and decreased consumption of sugar-sweetened beverages. Other dietary trends included increased consumption of whole fruit and decreased consumption of 100 percent fruit juice. No significant trend was observed for other diet score components, including total fruits and vegetables, processed meat, saturated fat, or sodium. The estimated percentage of U.S. adults with poor diets declined from 56 percent to 46 percent. The percentage with ideal diets increased but remained low (0.7 percent to 1.5 percent).

Disparities in diet quality were observed by race/ethnicity, education, and income level; for example, the estimated percentage of non-Hispanic white adults with a poor diet significantly declined (54 percent to 43 percent), whereas similar improvements were not observed for non-Hispanic black or Mexican American adults. There was little evidence of reductions in these disparities and some evidence of worsening by income level.

"These findings may inform discussions on emerging successes, areas for greater attention, and corresponding opportunities to improve the diets of individuals living in the United States," the authors write.

Reference:

1. Rehm CD, Peñalvo JL, Afshin A, Mozaffarian D. Dietary Intake Among US Adults, 1999-2012. JAMA. 2016 Jun 21;315(23):2542-53. doi: 10.1001/jama.2016.7491.

Source: JAMA News Releases; Jun 21, 2016; http://media.jamanetwork.com/news-item/improvement-seen-in-u-s-diet-although-disparities-persist-in-quality-by-raceethnicity-education-and-income/

Prevalence of Obesity in the U.S. Increases Among Women, But Not Men

The prevalence of obesity in 2013- 2014 was 35 percent among men and 40 percent among women, and between 2005 and 2014, there was an increase in prevalence among women, but not men, according to a study appearing in *JAMA* (1).

Between 1980 and 2000, the prevalence of obesity increased significantly among adult men and women in the United States; further significant increases were observed through 2003-2004 for men but not women. Subsequent comparisons of data from 2003-2004 with data through 2011-2012 showed no significant increases for men or women. To get a more comprehensive understanding of the trends in obesity, Katherine M. Flegal, Ph.D., of the National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, Md., and colleagues examined obesity prevalence for 2013-2014 and trends over the decade from 2005 through 2014, adjusting for sex, age, race/Hispanic origin, smoking status, and education. The researchers analyzed data obtained from the National Health and Nutrition Examination Survey (NHANES), a cross-sectional, nationally representative health examination survey of the U.S. civilian population that includes measured weight and height.

Although there has been speculation about the causes of the increases in obesity prevalence, data are lacking to show the causes of these trends.

The analysis included data from 2,638 adult men (average age, 47 years) and 2,817 women (average age, 48 years) from the most recent 2 years (2013-2014) of NHANES and data from 21,013 participants in previous NHANES surveys from 2005 through 2012. For the years 2013-2014, the overall age-adjusted prevalence of obesity (body mass index [BMI] 30 or greater) was 38 percent; among men, it was 35 percent; and among women, it was 40 percent. The corresponding prevalence of class 3 (BMI 40 or greater) obesity overall was 7.7 percent; among men, it was 5.5 percent; and among women, it was 9.9 percent. Analyses of changes over the decade from 2005 through 2014, adjusted for age, race/Hispanic origin, smoking status, and education, showed significant increasing linear trends among women for overall obesity and for class 3 obesity but not among men.

Analyses of the data from 2013-2014 found that for men, obesity prevalence varied by smoking status, with the prevalence of obesity significantly lower among current smokers than among never smokers. For women, there were no significant differences by smoking status, but those with education beyond high school were significantly less likely to be obese.

The authors write that although there has been considerable speculation about the causes of the increases in obesity prevalence, data are lacking to show the causes of these trends, and there are few data to indicate reasons that these trends might accelerate, stop, or slow. "Other studies are needed to determine the reasons for these trends."

Reference:

1. Flegal KM, Kruszon-Moran D, Carroll MD, et al. Trends in Obesity Among Adults in the United States, 2005 to 2014. JAMA. 2016 Jun 7;315(21):2284-91. doi: 10.1001/jama.2016.6458.

Source: JAMA News Releases; Jun. 7, 2016; http://media.jamanetwork.com/news-item/prevalence-of-obesity-in-the-u-s-increases-among-women-but-not-men/

Findings Suggest Small Increase in Obesity Among U.S. Teens in Recent Years

Among U.S. children and adolescents 2 to 19 years of age, the prevalence of obesity in 2011- 2014 was 17 percent, and over approximately the last 25 years, the prevalence has decreased in children age 2 to 5 years, leveled off in children 6 to 11 years, and increased among adolescents 12 to 19 years of age, according to a study appearing in *JAMA* (1).

Previous analyses of obesity trends among children and adolescents showed an increase between 1988-1994 and 1999-2000, but no change between 2003-2004 and 2011-2012, except for a significant decline among children 2 to 5 years of age. Cynthia L. Ogden, Ph.D., of the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC), Hyattsville, Md., and colleagues investigated trends in the prevalence of obesity and extreme obesity in children and adolescents age 2 to 19 years with measured weight and height in the 1988-1994 through 2013-2014 National Health and Nutrition Examination Surveys (NHANES). Obesity was defined as a body mass index (BMI) at or above the sex-specific 95th percentile on the CDC BMI-for-age growth charts; extreme obesity was defined as a BMI at or above 120 percent of the sex-specific 95th percentile on these charts.

No significant changes in either obesity or extreme obesity were seen between 2005-2006 and 2013-2014, suggesting any recent changes among adolescents were small.

Measurements from 40,780 children and adolescents (average age, 11 years; 49 percent female) between 1988-1994 and 2013-2014 were analyzed. Among children and adolescents 2 to 19 years of age, the prevalence of obesity in 2011-2014 was 17 percent and extreme obesity was 5.8 percent. Trends in child and adolescent obesity varied by age. During the approximately 25-year period, the prevalence increased until 2003-2004 but then decreased among children age 2 to 5 years (9.4 percent in 2013-2014). Among children 6 to 11 years of age, the prevalence increased until 2007-2008 and then leveled off (17.4 percent in 2013-2014). Among adolescents age 12 to 19 years, obesity prevalence increased between 1988-1994 (10.5 percent) and 2013-2014 (20.6 percent).

Trends in extreme obesity prevalence showed no change between 1988-1994 and 2013-2014 among children age 2 to 5 years, whereas it increased among children age 6 to 11 years (4.3 percent in 2013-2014) and among adolescents age 12 to 19 years (9.1 percent in 2013-2014).

No significant changes in either obesity or extreme obesity were seen between 2005-2006 and 2013-2014, suggesting any recent changes among adolescents were small.

Reference:

1. Ogden CL, Carroll MD, Lawman HG, et al. Trends in Obesity Prevalence Among Children and Adolescents in the United States, 1988-1994 Through 2013-2014. JAMA. 2016 Jun 7;315(21):2292-9. doi: 10.1001/jama.2016.6361.

Source: JAMA News Releases; Jun. 7, 2016; http://media.jamanetwork.com/news-item/findings-suggest-small-increase-in-obesity-among-u-s-teens-in-recent-years/

WIC Food Improves Preschool Children's Diet Quality

In the U.S., where one of five children entering elementary school is overweight, a healthy diet is critical for preschool children, who are setting their eating patterns for the future.

In 2009, more fruits, vegetables, whole grains and low-fat milk were included in the food voucher package provided by USDA's Special Supplemental Nutrition Program for Women, Infants and Children (WIC). As a result, the diet quality improved for the roughly 4 million children who are served by WIC, according to a study by researchers at UCSF Benioff Children's Hospital in Oakland, UC San Francisco and UC Agriculture and Natural Resources' Nutrition Policy Institute (1).

The Healthy Eating Index score increased from 52.4 to 58.3 for children in households participating in WIC. More than half of this increase (3.7 points) can be attributed to WIC, the researchers report.

"Although the findings only showed significant improvement for consumption of greens and beans, the other areas for which WIC has put in important efforts – increased consumption of whole fruits rather than fruit juice, increased whole grains – all show trends in the right direction," said lead author June Tester, a physician at UCSF Benioff Children's Hospital Oakland, "and there is opportunity for further study in the future when more years have passed after this landmark change in the WIC package."

For the study, published in the journal *Pediatrics*, researchers analyzed the diets of 1,197 children, ages 2 to 4 years, from low-income households before and after the 2009 change in the food package.

The researchers used the National Health and Nutrition Examination Survey (NHANES) to compare a nationally representative sample from 2003 to 2008 with diets in 2011 to 2012. The researchers calculated the Healthy Eating Index (HEI-2010), which is a score with 100 possible points measuring adherence to dietary guidelines, from two recalls by parents of their children's diets over the previous 24-hour period. For children in households using WIC, this score increased from 52.4 to 58.3 after the policy change. After adjusting for characteristics in the sample and trends in the comparison group, the researchers showed that there was an increase of 3.7 points that was attributable to the WIC package change. This represents important evidence of an improvement in the diets for these children in WIC households.

"Vegetables are part of a healthful diet, but in general, children don't eat enough of them," Tester said. Using the Healthy Eating Index, the researchers calculated the Greens and Beans score, which counts dark green vegetables and includes any legumes, such as beans and peas, that were not already counted as protein foods on a different score.

After the food package was changed, the Greens and Beans score increased for children in WIC but not for their counterparts. Roughly half of the children in WIC households had eaten some vegetables, whereas only one in five non-WIC children had consumed any green vegetables at all in the two days their parents were surveyed.

The change in the WIC food package is an important policy change in the effort to improve the

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One trend reported by the researchers was increased consumption of whole fruit.

quality of diets of young children, said Tester, a pediatrician.

Tester noted that the results of this study will be useful to the Institute of Medicine committee that is reviewing and assessing the nutritional status and food needs of the WIC-eligible population and the impact of the 2009 revision to WIC food packages. The committee will make recommendations for changing the food packages.

"Increasing consumption of nutritious foods such as green leafy vegetables and whole grains in the low-income children served by WIC will help them establish healthier eating patterns for their future," said co-author Patricia Crawford, UC Cooperative Extension nutrition specialist with UC ANR's Nutrition Policy Institute.

The switch from whole milk to low-fat milk was well received by the clientele and did not result in decreased milk consumption among the preschoolers, noted Tester, Crawford and co-author Cindy Leung, postdoctoral scholar at UCSF Center for Health and Community.

This study is the first to report on the significant improvements in diet quality in young children associated with the WIC package change using a nationally representative sample, and the first to do so with the updated Healthy Eating Index (HEI-2010).

Reference:

1. Tester JM, Leung CW, Crawford PB. Revised WIC Food Package and Children's Diet Quality. Pediatrics. 2016 May;137(5). pii: e20153557. doi: 10.1542/peds.2015-3557. Epub 2016 Apr 7.

Source: Children's Hospital Oakland News; Mar. 7, 2016; http://www.childrenshospitaloakland.org/main/news/345.aspx

Good Nutrition May Positively Affect Social Development

Proper nutrition during childhood can positively affect a child's social behaviors and development (1).

That's the main finding of a new study from two University of Pennsylvania researchers: Jianghong Liu, an associate professor in Penn's School of Nursing and Perelman School of Medicine, and Adrian Raine, the Richard Perry University Professor of Criminology, Psychiatry and Psychology. They published their results in the journal *Maternal & Child Nutrition*.

It's a unique take on a field that often focuses on how

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Nutrition has a strong impact on physical health, but it is also linked to social health and positive social behavior.

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poor diet negatively influences early childhood development.

"What people are not doing is looking at positive effects of good nutrition, in particular on social behavior," said Raine, a Penn Integrates Knowledge professor with appointments in the School of Arts & Sciences and Medicine. "We link nutrition to physical health but also social health and positive social behavior."

Liu, whose interdisciplinary research focuses on early health factors and children's neurobehavioral outcomes, said it's a gap in the research she hopes this work might bridge. "No one has looked at positive social behavior," she said. "Childhood social behavior, even adult social behavior, has a lot of implications for physical and mental health and well being."

Social interactions studied included friendliness, extent of verbalization, active social play and exploratory behavior.

For this study, the scientists analyzed a sample of 1,795 3-year-old children from Mauritius, an island off the eastern coast of Africa with a population of about 1.3 million people. They focused on four aspects of physical health related to nutrition and four indicators of social development.

Physical health factors included anemia expressed by low hemoglobin levels, reflecting iron deficiency; angular stomatitis revealed by cracked lips and a lack of vitamin B2 and niacin; and insufficient protein intake indicated by thin or sparse hair and hair discoloration. On Mauritius, where the majority of children have black hair, that fourth factor shows up as an orange or red tint to the hair.

The researchers considered a child with just one of the quartet as "suffering from nutritional deficits." However, children with more malnutrition indicators showed more impaired social behavior.

Social interactions studied included friendliness, extent of verbalization, active social play and exploratory behavior. A research assistant observed every child's success and rated these factors on a specified scale. The observer knew that the research concentrated on child development and behavior but was unaware of the nutrition-related hypothesis.

Examining the relationship between these components after the fact, Liu and Raine then teased out a neurocognitive link between nutrition and comprehensive social behavior. It's a connection undiscovered to this point.

"The bigger message is give children good nutrition early on," Liu said. "Not only will it enhance cognitive function but, importantly, promote good social behavior," which is essential to brain development and intelligence.

"In the same study," Raine said, "we've shown that children with positive social behavior, eight years later, they have higher IQs."

Despite the diversity of Mauritius, which has Indian, Creole and, to a smaller extent, Chinese,

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Children without malnutrition indicators, such as anemia or B2 deficiency, were more likely to demonstrate positive social behavior.

French and English populations, the researchers acknowledge a desire to replicate their findings in large cities in the United States. Another limitation is the study's cross-sectional nature, meaning measurements occurred all at once rather than over a long period of time.

Ideally, Raine said, "you want a randomized control trial. You want to manipulate nutrition to see whether you can get improvements in social behavior and cognitive function."

It's possible to reverse the effects of poor nutrition, too, according to the researchers. "It's never too late to provide good nutrients," Liu said.

"And it's never too early," Raine added.

Reference:

1. Liu J, Raine A. Nutritional status and social behavior in preschool children: the mediating effects of neurocognitive functioning. Matern Child Nutr. 2016 May 1. doi: 10.1111/mcn.12321.

Source: Penn News; May 5, 2016. https://news.upenn.edu/news/good-nutrition-positively-affects-social-development-penn-research-shows

Moms: Limiting Daily Caffeine Intake Can Be Healthy for You, Safe for Your Child

Will drinking that extra cup of coffee during pregnancy harm your baby? Maternal caffeine intake during pregnancy has been linked to a higher risk for low birth weight babies and slow rate of child growth. This recent study reports an increased risk of low birth weight, slowed fetal growth, as well as greater BMI ratios, in children whose mothers consumed more than six cups of coffee per day (1). The children were also gained more weight from birth to 72 months, were shorter, and had higher total body fat by six years of age.

"Although previous studies have consistently suggested that children born with a low birth weight are at higher risk of an adverse body fat distribution and insulin resistance in later life, not much is known about the direct, long-term offspring consequences of maternal caffeine intake during pregnancy," wrote authors from the Generation R Study Group from the Erasmus Medical Center. Researchers sought to clarify the relationship between maternal

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caffeine intake during pregnancy and childhood body fat distribution. The trends in body fat distributions may shed light on the potential consequences for childhood growth beyond six years of age.

Researchers evaluated maternal pregnancy coffee consumption in two groups: those who reported consuming less than two cups of coffee per day and those who reported consuming six or more cups per day. Body fat distribution and BMI were periodically measured from six months through six years of age.

Maternal consumption of more than six cups of coffee per day was associated with an increased risk of low birth weight and slow fetal growth. It was also associated with greater child weight gain between birth and 72 months and higher total body fat percentage by 6 years of age.

The researchers found that consuming six or more cups of coffee per day during pregnancy was associated with slowed child growth patterns and adverse body fat distribution. The analyses took into account potential maternal confounding factors such as age, pre-pregnancy body mass index, ethnicity, educational level, and folic acid supplementation. Limitations such as failure to follow-up and self reporting bias affect the strength of association in this study. Only long-term studies accounting for biases will provide the evidence for a direct relationship between maternal caffeine intake and childhood outcomes.

"As caffeine is frequently consumed during pregnancy and the prevalence of obesity is still rising, our results underline the need to study the long-term health consequences of maternal caffeine intake during pregnancy," researchers concluded. "Further studies are needed to assess whether maternal caffeine intake during pregnancy affects long-term offspring health outcomes, as well as the causality and underlying mechanisms."

Consuming caffeine during pregnancy ultimately lies in the hands of the mother. From this research, it is suggested that consuming high levels of caffeine may result in potential health risks for infant during fetal growth that can continue into childhood. The Dietary Guidelines for Americans 2015-2020 suggests moderate caffeine consumption constitutes 3 to 5 eight-ounce cups/day for healthy non-pregnant individuals (2). However, it is recommended that women who are pregnant or breast-feeding, or who are capable of becoming pregnant, should consult their health care providers for advice concerning caffeine consumption. Further research is needed in the future to confirm the link between maternal caffeine consumption and long-term offspring health.

Reference:

1. Voerman E, Jaddoe VW, Gishti O, Hofman A, Franco OH, Gaillard R. Maternal caffeine intake during pregnancy, early growth, and body fat distribution at school age. Obesity 2016;24(5):1170–1177. doi:10.1002/oby.21466.
2. Dietary guidelines for American 2015-2020. Washington, DC: United States Department of Health and Human Services; 2015.

Article by: Hanee Hyunhee Park, Michelle Chellino, and Janice Ho. Nutrition 129, Department of Nutrition, University of California, Davis.

FDA Approves Folic Acid Fortification of Corn Masa Flour

The U.S. Food and Drug Administration today approved folic acid fortification of corn masa flour. The approval allows manufacturers to voluntarily add up to 0.7 milligrams of folic acid per pound of corn masa flour, consistent with the levels of certain other enriched cereal grains.

Folic acid, a synthetic form of folate, is a B vitamin that when taken by a pregnant woman may help prevent neural tube defects, which are birth defects affecting the brain, spine, and spinal cord. Pregnant women with folate deficiency have a higher risk of giving birth to infants affected with neural tube defects.

Corn masa flour, sometimes called masa (Spanish for dough), is produced by cooking corn in alkali and then grinding it. Corn masa flour is a staple food for many Latin Americans including individuals of Mexican and Central American descent in the United States. It can be used to make foods such as tortillas, tortilla chips, tamales, taco shells, and corn chips.

Currently, manufacturers may use folic acid as an optional ingredient at specified levels in breakfast cereals and certain other foods, such as infant formula and medical foods, so that it is easier for people to get enough folic acid in their diets. Additionally, folic acid must be added to certain enriched grains and enriched grain products like breads, rolls, noodles and pasta. The March of Dimes Foundation, the American Academy of Pediatrics, and others submitted a food additive petition in 2012 to request the extension of voluntary fortification to corn masa flour to increase the folic acid intake for U.S. women of childbearing age who regularly consume products made from corn masa flour as a staple in their diet.

The addition of folic acid to corn masa flour has the potential to reduce the incidence of neural tube defects in U.S. for which this flour is a staple of their diet.

Photo by USDA, https://flic.kr/p/dTdkdZ

"Increased consumption of folic acid in enriched flour has been helpful in reducing the incidence of neural tube defects in the general population," said Susan Mayne, Ph.D., director of the FDA's Center for Food Safety and Applied Nutrition. "Our analysis shows that adding folic acid to corn masa flour will help increase the consumption of folic acid by women who consume this flour as a staple in their diet."

The FDA may approve the use of a food additive only after conducting a scientific safety review of the information provided in the petition to ensure that the additive is safe for the general population. With regard to folic acid, the FDA evaluated the projected human dietary exposure, toxicological data, and other relevant information, including whether folic acid remained stable in corn masa flour.

The FDA worked with the petitioners throughout the review process to obtain data needed to address safety questions as expeditiously as possible. Based on that data, the FDA concluded that the petitioned addition of folic acid to corn masa flour at a level not to exceed 0.7 milligrams of folic acid per pound of corn masa flour is safe.

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Exposure estimates from the FDA and the petitioners show that adding folic acid to corn masa flour could increase folic acid consumption in those who regularly consume products made from corn masa flour, including many Latina women. The petitioners contend that increased consumption of folic acid will reduce the risk of births with neural tube defects among this group. The FDA's approval is not based on the possibility of this reduced risk, but is instead based on a review of the safety of the proposed use of folic acid.

Manufacturers were able to begin voluntary fortification of corn masa flour with folic acid on April 15, 2016. Consumers wishing to purchase products made with corn masa flour fortified with folic acid should check the ingredients statement for the presence of folic acid.

The risk of neural tube defects can be reduced with consumption of folic acid during early pregnancy.

Source: Food and Drug Administration News Releases; Apr. 14, 2016; http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm496104.htm?source=govdelivery&utm_medium=email&utm_source=govdelivery

Added Protein Continues to Perplex Sports Nutrition: Performance and Recovery

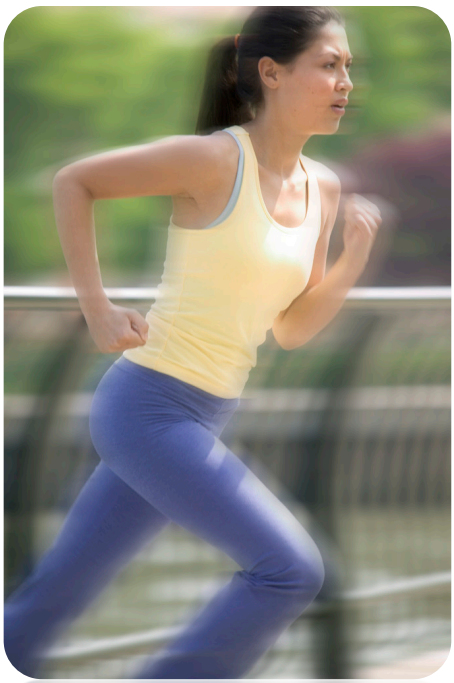
Globally, athletes of all kinds continue to strive for optimal performance and recovery. Dr. Mette Hansen and a team of researchers reveal that protein drinks following workouts may not be as effective as once thought (1). They examined the effects of protein and carbohydrate vs. strictly carbohydrate consumption on athlete's performance and recovery.

The study, published in the *Journal of the International Society of Sports Nutrition*, recruited 18 male racing cyclists associated with the Danish National Team. Participants were split in two groups and given either a drink containing a protein and carbohydrate mix or a drink containing only carbohydrate during exercise. Performance and recovery were monitored at the beginning, middle, and end of their six-day training camp. Results demonstrated that carbohydrate consumption, with the addition of protein intake during exercise, had no significant difference on performance.

Many athletes consume protein following workouts.

Protein *continued on page 14*

Protein (Continued from page 13)



The study reported no significant difference in recovery between a protein with carbohydrate post-exercise drink and an all carbohydrate post-exercise drink.

Furthermore, Dr. Hansen's data also suggested that there is no significant difference in decline in performance when athletes consumed a protein and carbohydrate post-exercise drink compared to those consuming an all carbohydrate post-exercise drink. The study also indicates no significant difference in recovery between a protein with carbohydrate post-exercise drink and an all carbohydrate post-exercise drink. These drinks were isocaloric to rule out potential observation brought on by a difference in calories.

Athletes often consume before-, during-, or after- workout drinks including drinks like Gatorade, water, chocolate milk, or a protein shake. This study could flip the workout beverage and shake-mix industry on its head, which may revolutionize the sport drink industry. Carbohydrate drink consumption is common among athletes for maintaining optimal performance. Dr. Hansen's results show that added protein may not have an impact on improving performance and recovery. More studies of this kind needed to create such an industry revolution.

There were limitations to the study. The experiment took place over a short span of six days and performance tests were only conducted twice: day one and day six. The participants were associated with the national team; therefore precautions were taken to keep their immediate health in homeostasis. Participants were at will to choose each day to drink and finish their assigned drink.

Reference:

1. Hansen M, Bangsbo J, Jensen J et al. Protein intake during training sessions has no effect on performance and recovery during a strenuous training camp for elite cyclists. *J Int Soc Sports Nutr.* 2016;13(1). doi:10.1186/s12970-016-0120-4.

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Physical Activity Associated with Lower Risk for Many Cancers

Higher levels of leisure-time physical activity were associated with lower risks for 13 types of cancers, according to a new study published by *JAMA Internal Medicine* (1).

Physical inactivity is common, with an estimated 51 percent of people in the United States and 31 percent of people worldwide not meeting recommended physical activity levels. Any decrease in cancer risk associated with physical activity could be relevant to public health and cancer prevention efforts.

Steven C. Moore, Ph.D., M.P.H., of the National Cancer Institute, Bethesda, Md., and coauthors pooled data from 12 U.S. and European cohorts (groups of study participants) with self-reported physical activity (1987-2004). They analyzed associations of physical activity with the incidence of 26 kinds of cancer.

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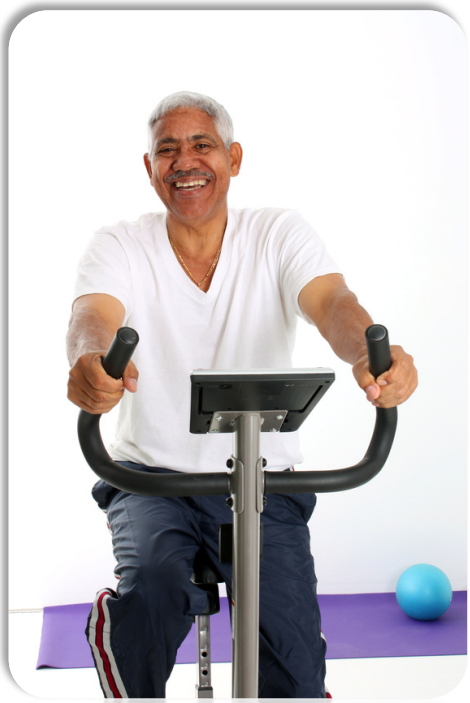
The study included 1.4 million participants and 186,932 cancers were identified during a median of 11 years of follow-up.

The authors report that higher levels of physical activity compared to lower levels were associated with lower risks of 13 of 26 cancers: esophageal adenocarcinoma (42 percent lower risk); liver (27 percent lower risk); lung (26 percent lower risk); kidney (23 percent lower risk); gastric cardia (22 percent lower risk); endometrial (21 percent lower risk); myeloid leukemia (20 percent lower risk); myeloma (17 percent lower risk); colon (16 percent lower risk); head and neck (15 percent lower risk), rectal (13 percent lower risk); bladder (13 percent lower risk); and breast (10 percent lower risk). Most of the associations remained regardless of body size or smoking history, according to the article. Overall, a higher level of physical activity was associated with a 7 percent lower risk of total cancer.



The authors report that higher levels of physical activity compared to lower levels were associated with lower risks of 13 of 26 cancers they studied.

Physical activity was associated with a 5 percent higher risk of prostate cancer and a 27 percent higher risk of malignant melanoma, an association that was significant in regions of the U.S. with higher levels of solar UV radiation but not in regions with lower levels, the results showed.

The authors note the main limitation of their study is that they cannot fully exclude the possibility that diet, smoking and other factors may affect the results. Also, the study used self-reported physical activity, which can mean errors in recall.

"These findings support promoting physical activity as a key component of population-wide cancer prevention and control efforts," the authors conclude.

In a related commentary (2), Marilie D. Gammon, Ph.D., of the University of North Carolina at Chapel Hill Gillings School of Public Health, and coauthors write "In sum, these exciting findings by Moore et al underscore the importance of leisure-time physical activity as a potential risk reduction strategy to decrease the cancer burden in the United States and abroad. They demonstrate that high vs. low levels of physical activity engagement are associated with reduced risk of 13 cancer types (including 3 of the top 4 leading cancers among men and women worldwide). The widespread generalizability of these findings is reinforced by the suggestion that the associations persist regardless of BMI or smoking status. However, additional research, including more formal mediation analyses, on the underlying mechanisms for the recreational physical activity-cancer association should be pursued vigorously."

Reference:

1. Moore SC, Lee IM, Weiderpass E, et al. Association of Leisure-Time Physical Activity With Risk of 26 Types of Cancer in 1.44 Million Adults. JAMA Intern Med. 2016 Jun 1;176(6):816-25. doi: 10.1001/jamainternmed.2016.1548.
2. McCullough LE, McClain KM, Gammon MD. The Promise of Leisure-Time Physical Activity to Reduce Risk of Cancer Development. JAMA Intern Med. 2016 Jun 1;176(6):826-7. doi: 10.1001/jamainternmed.2016.1521

Source: JAMA News Releases, May 16, 2016; http://media.jamanetwork.com/news-item/physical-activity-associated-with-lower-risk-for-many-cancers/

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