Does the Paleolithic Diet Decrease Risk Factors for Cardiovascular Disease?

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Abstract

The modern Westernized diet is suspected to increase risk factors of cardiovascular disease often due, at least in part, to the abundance of refined cereals and sugars and high levels of saturated fats often found in dairy. In the United States, 38.5 percent of people die from cardiovascular disease, which is more than one in three deaths, making it the nation’s leading cause of mortality (Cordian, 2005). This has in part occurred due to the changes in agriculture and industry, which have strayed far from humans’ original genetic evolution. The Paleolithic lifestyle took place during the first 2 million years of human evolutionary experience, during which time humans developed adaptations to their body mass, shape, locomotive capability, resting metabolic rate, and brain size (Eaton & Eaton III, 2000). This article focuses on adapting aspects of the Paleolithic diet, which can decrease risk factors of cardiovascular disease, such as abnormalities in blood pressure, blood glucose, dyslipidemia, and visceral adiposity, when coupled with a community wellness program.

Community Health

Adopting aspects of the Paleolithic diet can be crucial to the success of fitness programs geared toward preventing and decreasing cardiovascular disease risk factors. Physical activity was not
optional for early humans, as it was required for the survival for our ancestors. Unfortunately, the elimination of both the need for, and the performance of, regular movement has left our bodies confused and vulnerable to chronic disease (Dalleck, 2012).

Specifically, according to Katzmarzyk, Church, Craig, and Bouchard (2009), many individuals who participate in moderate to vigorous physical activity daily still log copious amount of sitting time, and there is a dose-response relationship between sitting time and cardiovascular disease. This is coined the “active couch potato phenomenon” (Owen, Healy, Matthews, & Dunstan, 2010). Because many modern jobs require considerable amounts of time utilizing computers and sitting in an office, becoming an active couch potato is an easy fate to passively fall into if exercise is one’s only means of attempting to stay healthy. Therefore, diet and energy consumption becomes highly influential to the success of reducing these risk factors.

Along with Paleolithic diet, great volumes of energy expenditure should be performed via low- to moderate-intensity aerobic activity—the recommended dosage is 14 to 23 kcal/kg/week (Dalleck & Borresen, 2006). More energy expenditure mimics the Paleolithic lifestyle, the more optimal the level of cardiorespiratory fitness, which is arguably the most important factor for cardiovascular health. It has been shown that low cardiorespiratory fitness accounts for more deaths in both men and women than any other cardiovascular disease risk factor, including smoking, obesity, hypertension, and hypercholesterolemia (Blair, 2009). Therefore, the Paleolithic lifestyle, with a pattern of daily energy expenditure from physical activity, is one of the most powerful predictors of long-term health and survival (O’Keefe et al., 2010). The Paleolithic diet
should be mimicked, paired with high volumes of energy expenditure, for the optimal benefits in the prevention of, and even reversal of existing, cardiovascular disease risk factors in community wellness programs.

**What is the Paleolithic diet?**

It is predicted that our ancestors ate wild game, fish, uncultivated plant foods, and, when available, honey, prior to becoming dependent on agricultural practices. Grains were for emergencies and there were no dairy products, oils, salt, processed foods, or empty calories (Eaton & Eaton III, 2000). Refer to Table 1 for a macronutrient breakdown of a Paleolithic diet (Frassetto, Schloetter, Synder, Morris Jr., & Sebastian, 2009).

**What is the Western diet?**

The contemporary American diet contributes to numerous chronic diseases, such as cardiovascular disease, diabetes and obesity. Approximately 65 percent of adults older than 20 years old in the United States are either overweight or obese (Cordain, et al., 2005). Western diets contain extraordinarily high quantities of saturated fats as well as low amounts of lipoprotein, which is the enzyme that breaks down free fatty acids (Fung et al., 2014). Refer to Table 1 for a macronutrient breakdown of the typical Western diet.

**Table 1: Protein, Carbohydrate, and Fat Percentages of the Western and Paleolithic Diets**

<table>
<thead>
<tr>
<th></th>
<th>Western Diet</th>
<th>Paleolithic Diet</th>
</tr>
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<tbody>
<tr>
<td>% of diet consisting of protein</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>% of diet consisting of carbohydrates</td>
<td>44</td>
<td>38</td>
</tr>
<tr>
<td>% of diet consisting of fat</td>
<td>38</td>
<td>32</td>
</tr>
</tbody>
</table>
Physiological Benefits of the Paleolithic Diet

Insulin Sensitivity

The Paleolithic diet increases insulin sensitivity in individuals participating strictly in that diet (Eaton & Eaton III, 2010; La Frassetto et al., 2009; Lindeberg et al., 2007; Jonsson et al., 2009). Insulin sensitivity is crucial, because insulin maintains blood glucose levels. The more sensitivity one has to insulin, the more effective the insulin is in eliminating high blood glucose in the body. Furthermore, glycemic control was reduced in comparison to a prescribed diabetes diet, which further suggests improved insulin sensitivity (Jonsson et al., 2009).

Satiety

Satiety is defined as the quality and state of being fed or gratified. With the Paleolithic diet, overindulgence on food past the point of being full occurs less frequently than in a Western diet or even the much healthier Mediterranean diet. Foods themselves differ in their satiating capacity, due to their nutritional composition (Jonsson, Granfeldt, Erlanson-Albertsson, Ahren, & Lindeberg, 2010). In the Westernized diet, there is a greater prevalence of the release of the hormone leptin, which influences appetite and energy homeostasis (Jonsson, Granfeldt, Erlanson-Albertsson, Ahren, & Lindeberg, 2010). Therefore, individuals who overeat and consume large percentages of fat per meal are at risk for increasing leptin resistance. As leptin is produced by adipose tissue, the more adipose tissue, the greater the existence of leptin. Leptin operates as a long-term mediator of regulation of energy balance and food intake suppression. The abnormality of leptin levels existent in the Western diet can contribute to the development of obesity (Klok, Jakobsdottir, & Drent, 2007). This abnormality of leptin results in involuntary overeating, which
suggests that leptin resistance is not only a cause, but also an effect, of obesity (Jonsson, Granfeldt, Erlanson-Albertsson, Ahren, & Lindeberg, 2010). After a 12-week transition to the Paleolithic diet, the changes in free leptin index correlated with decreases in waist circumference (Jonsson, Granfeldt, Erlanson-Albertsson, Ahren, & Lindeberg, 2010). This is primarily due to consumption of foods with high nutritional value, fiber, and low saturated fat, and the minimizing of dairy intake and refined sugars.

**Vitamin Rich**

Out of necessity, our ancestors used the complete foods around them to get all of the essential nutrients needed to maintain a healthy lifestyle, unlike many in today’s society for whom a nutritional supplement in the form of a pill “solves” the problem. If planned correctly, the Paleolithic diet meets all of the nutritional needs of the body without supplementation, which can save money down the road. The emphasis on fruit and vegetable consumption allows for adequate absorption of vitamin C, antioxidants, carotenoids, and phytochemicals, which have been linked to reducing cardiovascular disease (Cordain, 1999). Research has shown that 91 percent of adults in the United States do not meet the recommended two to three servings of fruit and three to five servings of vegetables a day set by the United States Department of Agriculture (Cordain, 1999).

**Nutritional Risk Factors of the Western Diet**

A study performed by Talreja et al. (2014) examined the impact of a Paleolithic diet on individuals with at least one risk factor for cardiovascular disease after a 60-day intervention. The subjects had gone from consuming a typical Western diet to adhering to the Paleolithic diet. At the end of
the intervention, individuals lost an average of 12 pounds and decreased their body mass index by two points. The average triglyceride levels were also found to decrease by 24 mg/dL. The last significant risk-factor reduction was diastolic blood pressure decreasing by 6 mmHg. This study clearly suggests that the Western diet is not only deficient of nutritional value, but detrimental to overall cardiovascular health as well.

_Cereals_

Cereal grain–based foods are also relatively new, and thus foreign to Paleolithic diets. The smaller grains were hard to harvest and to eat without some form of processing, usually grinding and cooking (Cordain et al., 2005). Even after agriculture became commonplace and tools were developed to grind the cereal grains, this food resource would usually not be available year round. One of the things that made these foods more available was introduced during the industrial revolution. At that time, means came about to grind and sift cereal grains more efficiently, but these processes required that the germ and the bran be removed from the grain, which immensely changes the nutritional content of the post-processed cereal grains. It is now estimated that 85.3 percent of the cereals consumed in the U.S. are highly processed refined grains. The total percentage of energy from cereal grains is estimated to be 23.9 percent. Cereal grains also have relatively low vitamin contents (Cordain, 1999), as they have no vitamin C, B₁₂, D, or A. Traditionally, the lack of vitamin content is not an issue because cereal grains have often supplemented diets where fruit and vegetable consumption is adequate. However, culturally, the Western diet continues to lack the recommended amounts of these vitamin-rich foods, and cereal consumption is increasingly replacing other foods in one’s diet. These patterns perpetuate vitamin and mineral deficiencies in the Western diet.
Dairy

Dairy consumption is essentially non-existent in the Paleolithic diet, based on the idea that the production of dairy products from the milk of wild mammals, was nearly impossible for our pre-agricultural ancestors (Cordain et al. 1999). However, with respect to cardiovascular health, studies have found mixed results concerning whether or not dairy consumption is harmful. Dairy is often thought of as harmful because of saturated fat content, which increases plasma cholesterol, which, in turn, is associated with a higher risk for cardiovascular disease (German et al. 2009). However, the fatty acids in dairy are complex and also provide beneficial components that can decrease cardiovascular disease risk factors. Calcium, for example, has been shown to decrease blood pressure. However, any benefits of having dairy in one’s diet are more than made up for by the other aspects of the Paleolithic diet, such as the plethora of nutrients resulting from the increased consumption of fruits and vegetables.

Refined Sugars

Another aspect of the Paleolithic diet that is critical to adapt to reduce cardiovascular disease risk factors is the elimination of virtually all refined sugars. Our ancestors did not have the processed foods laced with the amount of sugars that we have today. Besides the natural sugars found in fruits and vegetables, honey was the only other real source of sugar, and it was seasonal. Sugar consumption during the Paleolithic era is estimated to have been 2 kg (4.4 lb) per person per year, based on the eating habits of unindustrialized indigenous Australian Aborigine tribes (Cordain, 2005). Nearly anything in a package has added sugar to make the product taste better than offerings from competitors, and the same can be said for fast-food restaurants and even restaurants in
general. Other sources of high sugar consumption are beverages such as soda, sports drinks, iced tea, and often coffee with added sugar. The estimated consumption of refined sugar in England in 1815 was 6.8 kg (15 lb) per capita. In 1970, the average consumption of sugar per capita was 54.5 kg (120 lb), which is very similar to the average consumption in the United States, which was 55.5 kg (122 lb). In 2000, consumption was at 69.1 kg (152 lb) per year. A comprehensive study found that while it is difficult to measure the effects of high refined-sugar consumption in the long term because of other uncontrollable factors, in the short term consumption has been shown to raise triglyceride levels and lower high-density lipoprotein (HDL) levels, both of which have been demonstrated to contribute to risk factors for cardiovascular disease (Howard & Wylie-Rosett, 2002).

**Take-home Message of Community Health**

Diet will play a key role in the success of the program when attempting to improve cardiorespiratory fitness and limit the risk factors for cardiovascular disease. The adoption of a Paleolithic diet can be a daunting and vast alteration to one’s lifestyle. The literature reveals greater benefits of a Paleolithic lifestyle over popular and effective diets such as the Mediterranean and clinical type 2 diabetes diets. The combination of mimicking the higher Paleolithic energy-expenditure levels, along with dietary adherence in a community wellness program, is highly recommended. Crucial components that lead to a decreased prevalence of cardiovascular disease are the emphasis on meat, fruit, and vegetable consumption to maintain satiety while decreasing caloric intake and also getting all of the essential nutrition to remain independent of vitamin supplementation. The avoidance of dairy, cereals, and refined sugars will also help to decrease risk
factors. An evidence-based conclusion suggests that adapting these principles will contribute to a successful reversal of existent cardiovascular disease risk factors within a wellness program.

Paleolithic Takeaways

| Protein consumption | • Sources: meat, eggs, and nuts  
|                     | • Increase to 30 percent of caloric diet  
|                     | • Avoid fatty meats  
|                     | • Strive for locally grown, grass-fed meats  
| Carbohydrate consumption | • Primary sources: fruits and vegetables  
|                        | • Aim for 38 percent of caloric diet  
|                        | • 2–3 servings of fruit a day  
|                        | • 3–5 servings of vegetables a day  
| Fat consumption | • Sources: nuts, meats, and fish  
|                 | • 32 percent of caloric intake  
|                 | • Should come naturally with protein consumption  
| Food to avoid | • Refined cereals in:  
|               |   o Breads, pastas, and other wheat-based products  
|               |   o Buy whole-grain products when needed  
|               | • Dairy  
|               | • Refined sugars  
|               |   o Best avoided by preparing one’s own food  
|               |   o Avoid sugary beverages  
|               |   o Do not rationalize consumption during holiday seasons and overeat  
|               |   o Be cautious while eating out  
|               |   o Occasionally splurge, but do not binge  

References


