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Physical Activity: A Tool for Improving Health (Part 1—Biological Health Benefits)

Abstract

Extension educators have been promoting and incorporating physical activities into their community-based programs and improving the health of individuals, particularly those with limited resources. This article is the first of a three-part series describing the benefits of physical activity for human health: 1) biological health benefits of physical activity, 2) mental health benefits of physical activity, and 3) recommended amounts of physical activity for optimal health. Each part of the series is designed to help Extension educators effectively integrate physical activity into community programs and motivate individuals to maintain an interest in being physically active during and after the program.

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Introduction

The Dietary Guidelines recommend that physical activity (PA) should balance dietary intake as a means of weight management and to reduce sedentary behavior (USDA and DHHS, 2010). Given the importance of including daily PA as part of a healthy lifestyle (USDA, Tips for increasing PA, ChooseMyPlate.gov), Extension professionals have been promoting and incorporating PA into their community-based programs and improving the health of individuals, particularly ones with limited resources (Case, 2010; Gunter & John, 2014; Klotzbach-Shimomura, 2001; Palmer-Keenan & Corda, 2014; Rice, 2007). This article is the first of a three-part series describing the benefits of PA for human health: 1) biological health benefits of PA, 2) mental health benefits of PA, and 3) recommended amounts of PA for optimal health. Each part of the series is designed to help Extension professionals effectively integrate PA into community programs and motivate individuals to maintain interest in being physically active during and even after the program ends.

Biological Health Benefits of Physical Activity

PA is one of the best things people can do for their health. PA not only burns calories, but it also benefits virtually every system of the body. All-cause mortality rates are reduced for those who are physically active (Löllgen, Böckenhoff, & Knapp, 2009), meaning that those who are achieving

certain levels of PA in their lives are less likely to die when all causes of death are included. PA increases blood flow throughout the body, which does two important things for cells in the body: it increases the flow of oxygen to cells and helps carry cellular waste away to be removed from the body. Here, some of the body systems that benefit from PA are explained.

Cardiovascular System

Moderate levels of occupational PA and high levels of leisure-time PA are both associated with significant decreases in cardiovascular disease (CVD) risks for both men and women (Li & Siegrist, 2012). Regular PA improves cardiovascular health and lowers the risk of CVD by lowering blood pressure, increasing levels of high-density lipoproteins (HDL: "good cholesterol"), reducing levels of low-density lipoproteins (LDL: "bad cholesterol"), and increasing tolerance for physically strenuous activities (Myers, 2003). If people sit for long periods at their job, their cardiovascular health will especially benefit from an exercise program during their free time. PA is one of the protective behaviors Extension educators are incorporating to lower heart disease risk (Rice, 2007; Siewe, 2001).

Digestive System

Physically active people have a lower risk of developing colon adenomas, which are precursors to colon cancer (Wolin, Yan, & Colditz, 2011). PA increases motility of the digestive system (Wang, Kondo, Suzukamo, Oouchida, & Izumi, 2010); waste spends less time in the large intestine, which helps prevent colon cancer. Although bouts of intense, strenuous PA can temporarily slow digestive processes as blood flow is directed away from the digestive system toward the skeletal muscles being used, PA promotes digestive health in the long run. Extension educators can partner with local health organizations, such as the American Cancer Society, to promote PA within their community-based programs (Case, 2010).

Endocrine System

The organs comprising the endocrine system produce and release hormones that enter the bloodstream and perform several essential functions. Hormones help us manage our weight and blood sugar, repair and strengthen bones and tissues, and maintain homeostasis—the body's ability to internally regulate conditions such as temperature, blood pressure, and oxygen levels to stay alive. Insulin is a hormone released by the pancreas that regulates glucose (sugar) in the blood by supplying cells with the glucose for energy or removing glucose by storing it as fat. Type 2 diabetes occurs when cells are no longer as sensitive to insulin—insulin resistance results in high levels of glucose in the blood; this damages the body over time. PA increases cell sensitivity to insulin, which can help people—diabetic and non-diabetic alike—regulate their blood glucose (Hawley & Lessard, 2008). Elementary school-based programs addressing food and PA choices for preventing type 2 diabetes can provide unique opportunities for promoting PA in Extension programming (Stovall-Amos, Parker, Mata, Fox, Jackson, Miracle, & Hermann, 2014).

Immune System

A number of studies indicate that moderate PA enhances immune function (Gleeson, 2007). Inflammation is an immune response to things that can harm our body such as pathogens or even our own malfunctioning cells. There is nothing wrong with acute inflammation; in fact, it is a vital response by the immune system that regularly saves lives during infections or with tissue damage. However, chronic inflammation, which often accompanies obesity and a sedentary lifestyle, can lead to diseases such as cancer and atherosclerosis, so keeping chronic inflammation in check is very important for our health. Regular PA reduces inflammation and keeps an overactive immune system in check (Lavie, Church, Milani, & Earnest, 2011).

Skeletal System

Bones benefit greatly from activities such as weight training, lifting objects during daily activity, jumping, or using resistance bands (Hongu, Wells, Gallaway, & Biligic, 2015). Bones become stronger and denser, allowing them to handle more and more weight over time with training. High-impact exercises, such as jumping and weight training, produce the greatest benefits for bone health, significantly increasing bone mass, while moderate-impact exercises, such as jogging or walking, have more limited benefits. Extension programs designed to improve bone health and reduce fractures and osteoporosis introduce the concept of building strength through every day PA and nutrition education (Gunter, & John, 2014; Klotzbach-Shimomura, 2001).

Integumentary (Skin) System

When we perform physically strenuous activities, our bodies heat up. To cool us off, more blood is sent to the skin so the heat can radiate out away from our bodies. Skin benefits from this increased blood flow because it brings more nutrients and helps carry away waste, keeping skin healthier.

Conclusion

Extension professionals can play an integral role in the health of the people they serve. When Extension professionals learn about PA and incorporate PA into their programs, the health benefits can go a long way in reducing the risk of disease and improving the nation's health.

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