

Evolution of Human Physical Activity

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Six million years ago the story of human evolution began. The genus *Homo* first evolved at least 2.3 million to 2.5 million years ago. The oldest known fossils with skeletal features typical of modern humans are dated from 195,000 years ago. Modern *Homo sapiens* evolved in Africa and began spreading to other parts of the world 90,000 years ago or a little earlier, and it was not until about 40,000 years ago that anatomically modern humans, *Homo sapiens sapiens*, emerged.

From the dawn of humankind to around 10,000 BC, men had a constant motive to move: "Run for your life!" Physical development followed a natural path that was determined by the practical demands of life in a wild landscape as well as the vital need to avoid threats and seize opportunities for survival. To survive in a harsh environment full of natural and human obstacles and enemies, early man had to know not only how to run, but also walk, balance, jump, crawl, climb, lift, carry, throw and catch things, and fight. The strength and mobility of early man was not developed through structured programs, methods, or schedules, but rather was forged by the daily, instinctive, necessity-driven practice.

Starting between 10,000 and 8,000 BC, the Agricultural Revolution is often considered to be the dawn of civilization. Man's transition from nomadic hunter-gatherer to farmer led to dramatic changes in his physical activity. The numerous demands of growing food and raising cattle meant a lot of daily labor for farmers. The need for performing a variety of complex movements like running, balancing, jumping, etc. greatly diminished. Such movements were rarely performed in a farm environment, or were performed in much simpler ways.

Between 4,000 BC and the fall of the Roman Empire in 476 AD, civilizations rose and fell through war and conquest. Assyrians, Babylonians, Egyptians, Persians, and later on, the Greeks and Romans all imposed physical training on boys and young men. There was one main purpose - preparing for battle.

Ancient civilized populations valued physical culture for sports as well. Records of athletic competitions exist from ancient Egypt, and of course, the ancient Greeks famously created the first Olympic games. These early sports were all based on practical, natural movement skills and were fundamentally related to the preparedness needed for war.

Under feudalism only nobles and mercenaries underwent physical training for military service. Similarly to ancient times, their training centered on natural movements and martial skills. The rest of the population were mostly peasants obliged to live on their lord's land and work extremely hard in fields using rudimentary tools. Their "exercise" (better said "physical activity") came through hard labor.

In 1569 Girolamo Mercurialis (1530-1606), an Italian physician, published *De Arte Gymnastica*. It was the culmination of his studies of classical and medical literature, particularly the ancient Greeks' and Romans' approach to hygiene, diet, and exercise, and their use of natural methods for the treatment of disease.

Ioannes Amos Comenius (1592 –1670) was a Czech philosopher, pedagogue and theologian. He served as one of the earliest champions of universal education, a concept eventually set forth in his book *Didactica Magna*. He is considered the father of modern education. Movement is important for healthy development of the child. It shouldn't be forbidden but supported, supervised by and under leadership of the teacher: hiking, running, jumping, games (*Didactica magna*).

In 19th century several pioneers of physical education appeared in Europe and America: Johann GutsMuths (1759-1839) and Friedrich Jahn (1778-1852) in Germany, Peter Henrik Ling (1776-1839) in Sweden, Francisco Amorós (1770-1848) in Spain, Hippolyte Triat (1813-1881) in France, Archibald MacLaren (1871-1944) in England, Miroslav Tyrš (1832-1884) and Jindřich Fugner (1822-1866) in Bohemia etc. Dudley Allen Sargent (1849-1924) is considered to be the founder of physical education in the United States. Some of them promoted gymnastics, others advocated the practice of the traditional natural movements like running, balancing, jumping, climbing, marching drills, fencing, and various forms of weightlifting, and even massive gymnastics festivals. Their ideas spread throughout Europe and America.

At the very beginning of the 20th century Georges Hebert (1875-1957) developed and promoted his "Natural Method". He published his first book, *L'Éducation Physique ou l'Entraînement Complet par la Méthode Naturelle (Physical Education or Complete Training by the Natural Method)*, in 1912, followed by many other works on the same subject.

The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840. This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, the development of machine tools and the rise of the factory system. The onset of the Industrial Revolution is considered like the most important event in the history of humanity since the domestication of animals and plants.

Human experience is sometimes split up into epochs. Our recent epoch – transition between fourth and fifth civilization – brings more and more scientific information and widespread awareness about the importance of regular physical activity for human health. We understand more about how the human body works and responds to physical training than we ever have before. We have evidence based scientific knowledge about how important physical activity is for human health. However, the general population has never been so physically sedentary and out-of-shape.

Cardiorespiratory fitness (CRF) is not only an objective measure of habitual physical activity, but also a useful diagnostic and prognostic health indicator for patients in clinical settings. Although compelling evidence has shown that CRF is a strong and independent predictor of all-cause and especially

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cardiovascular disease mortality, the importance of CRF is often overlooked. Several prospective studies indicate that CRF is at least as important as the traditional risk factors, and is often more strongly associated with mortality. Most individuals can improve their CRF through regular physical activity. Several biological mechanisms suggest that CRF improves insulin sensitivity, blood lipid profile, body composition, inflammation, and blood pressure. Health professionals should encourage their patients to improve CRF through regular physical activity.

World Health Organization report indicates that life expectancy in the U.S. dropped for first time since 1993. The health of modern people is declining, despite highly advanced medical technologies, and in spite of the thriving health and fitness industry. There are lot of warning data regarding health state of population in Czech republic: statistical data indicate that 20 % of children 7 to 12 years old, 60 % of adult men and 47 % of adult women are overweight, many of them obese, 840 thousands citizens have diabetes, mostly type II (and another 250 000 don't know yet about it), about 2 millions people are hypertonic (one third of them doesn't know about their illness), about 800 thousands of patients are registered by general practitioners with diagnosis ischemic heart disease etc. (Czech republic has 10.5 millions inhabitants). Despite of permanently increasing life expectancy even in Czech republic and other industrial countries similar trend like in USA could be sooner or later expected.

Principle changes in lifestyle habits must occur to be able to change this cheerless development. Physical activity must be integral part of living since childhood until advanced age. How to reach this target in majority of population will be subject of scientific interest for many future decades. Let's hope that future human generations will not be called *Homo sedentarius*.