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Research on the relationship between chemical elements and human body health in sports environment

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ABSTRACT

Chemical elements are the most essential Relationship between human body health and sports environment. They relate to human being with the soil, air, water, and so on, of the sports environment. Thus we can draw a conclusion that a very close relation between human body health and chemical elements in sports environment. And a lot of some chemical element human body is closely and inseparably related to sports environment. Some Chemical elements which proportion may influence the physiological functions and normal growth of human being in sports environment. This paper analysis of the correlation with crustal elements and elements of life reveals the trace element imbalance harm for human health in geochemical environment. At same time, pointed out the factors those influence the balance of trace elements and human body. Finally, puts forward the important measure which maintain body balance, balanced nutrition which provide trace elements for human body, safeguarding human health, to optimization and utilization of geochemical environment.

KEYWORDS

Sports environment; Human being; Chemical elements.



INTRODUCTION

The global warming, the depletion of the ozone layer, acid rain pollution are three major global environmental problems, these threaten the survival of human being, in 20th Century 80 human understand theological environment in deepening^[1], in 21st Century. A series of pollution is incident that whole society has aroused the concern of global environmental pollution. Now, environmental pollution becomes an important field of environmental geochemistry. In this regard, Britain, the United States, Germany, Japan and Finland studies more research in this area. Chinese has also carried out a great deal of research, and achieved some success Since 1980, such as the (people Republic of China endemic diseases and environmental atlas) is published by Tan see in 1989, (China ecological environmental geochemical Atlas) is published by Li Jia xi and Wu Gong in 1999. These results confirmed that there is a close relationship between trace elements and human health. The sports environment which a kind of new social concept, human gradually concern that. Now, "environment and health" as one of the professional courses which belong to the Course of the ordinary higher school sports education undergraduate program issued by Ministry of education in China. The soil, air, water Relationship with human being, some chemical element which is closely related to human health in sports environment.

The natural environment and human environment

Environment means the surrounding circumstances that human survival and Activity in, one word, the environment is that the human survival and engaged in various of activities in. Sports environment is the sum of the natural environment which as the center of human activity and social environment, and sports related factors^[2]. Sports environment is intermediary in the natural environment and social environment, is a product of human being use of the environment, adapt to the environment and transform the environment, for the better sports fitness, entertainment and sports competitions and the active. The center of Sports environment is Personal or groups of sports activity, with long-term nature, complexity and diversity. Modern science technology Proof that the earth is the most suitable for human and all living creatures, which is one of the nine planets in the solar system. The earth provides the basis material for the survival and development of humanity and all living. Life material continuously gets the growth and development of energy and material from the natural environment for survival^[3], and which through natural selection has uniform with environmental material. Today, the composition and the content of chemical elements are dynamic in the human body. Chemical elements are the most essential of the intrinsic link between the human and the natural environment. The human body is composed by a variety of chemical elements and compounds. It is found that the chemical elements where the human body up to as many as 25. The element that is necessary to the human body has not yet been found greater than 53 which atomic number.

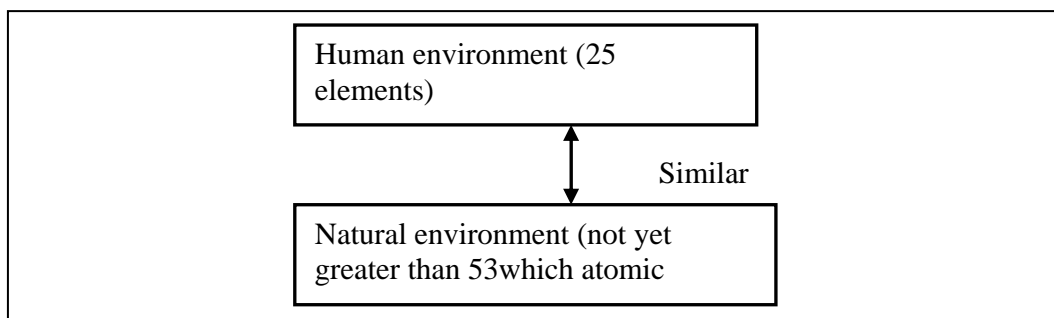


Figure 1 : The natural environment and human environment

Sports environment and human health

The human, through the metabolism, constantly exchange of matter and energy from the natural environment, which is necessary for living, such as air, water, food and other material. At the same time,

matter through decomposition produce energy for the human body^[4], in order to maintain the normal growth and development. On the other hand, several of thing don't need by body produced in the metabolic process, through various channels to row in the environment. The metabolic matter as nutrient will be uptakes by other living in the further. scientists Analysis the 60 kinds of most common elements that the dust in the air, water, rocks, fish, food, human blood and brain of any kind, they found elements in human tissue and crustal elements distribution has obvious relevance. The composition and the content of chemical elements will affect the body's physiological function, the growth of body and health of mind. The World Health Organization believes that "health is a good state in sports, spiritual, and a good ability to adapt to environment, and not means the state absence of disease and the weak "one word, completely healthy people is sports and mental health, namely sports health, mental health, social adaptation and moral good health. Sports scholars put the concept of health to environment adaptability relates in together, they believe that "health is the strength, speed, agility and durability under special conditions, which the modern people can play not seen in daily life ". Those educate people usually try to surpass the human limit of physiological (sports), psychological (mental),and development the potential of body.

Chemical elements and human health

Unbalanced distribution of chemical elements gradually formed in the geological history of the development. Unbalanced distribution of chemical elements control and influence the development of mankind and living in a certain extent^[5], and which is result distinct regional differences in biologically. Study of modern people is not only committed to environmental geochemistry and health of human body, chemical elements and plants, but also a lot of research on the relationship between chemical elements and human, in order to explore balance human and chemical element. Human being has been widespread concern our environment in modern society. As we all know, the main factor causing the global ecological crisis is the chemical factors, chemical method is the most important means to change the environment. Some Chemical elements which proportion may influence the physiological functions and normal growth of human being in sports environment^[6].

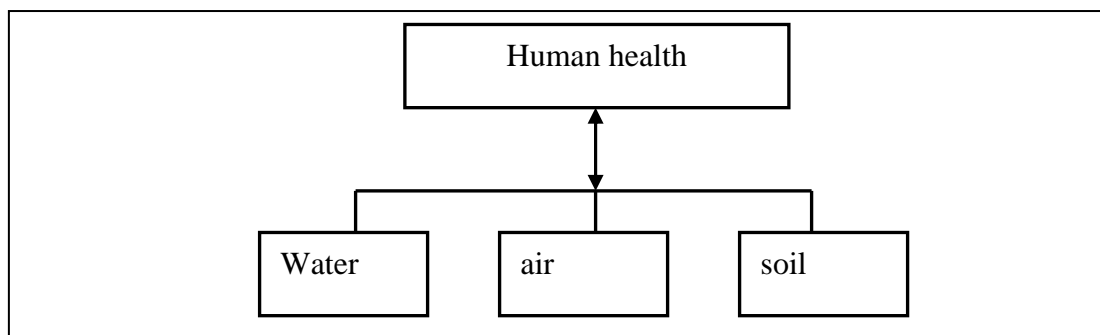


Figure 2 : The sports environment elements and human health

Firstly, air in the sports environment

Air is essential to all living on earth. However, atmospheric pollution gave everything pose a serious threat to the survival, especially human. Atmospheric pollution comes from two aspects that nature and human activities. Human activity cause pollution has far exceeded the nature cause pollution. pollution that Human activity caused mainly come from the incomplete combustion of the fuel, and Improper handling with the pollution source. Pollutant is emissions from human activities, when the concentration of pollutants in excess of atmospheric self purification ability^[7]. The diffusion into the atmosphere can cause atmospheric pollution, which direct or indirect impact on human health. The main pollutants Include that sulfur dioxide, nitrogen oxides, total suspended particles, sulfur oxides, dust, dust, trace elements and organic pollutants.

Second, soil in the sports environment

Soil as the part of natural is derived from natural geographical environment, is the combination with inorganic and organic. Mineral elements play an important role to the human body composition and survival in soil. For example, the soil content chemical elements that phosphorus, calcium, magnesium, the human body more tall and long legs in this areas. persons is more Tall and big in the north than in the southern in China, the main reason lies soil huge loss of Mineral elements that calcium and magnesium in the southern, and effective phosphorus content is generally low in southern soil.

Third, water in the sports environment

Water is composed by two kinds of chemical elements C and H, which is the most active factor in sports environment, and plays an important role in the environment. Water contact with air determines the quality of sports environment. Water nourishes lives which live in sports environment. There isn't water, without life, human health will be impossible.

Fourth, chemical elements and human body

Chemical elements are the basic units of human body. At present, there are More than 90 species of elements in the earth's crust, have been detected 81 species of elements in the human body. The essence of human relationship and sports environment question is the chemical elements, whether the soil, air or water. The human body is to carry out the exchange of substances, through the metabolism and the surrounding environment. The results show that: the human body contains almost all of the elements in the periodic table which is in the 20th Century. American geochemist found that abundance curve of elements in the human body, have a lot of similarity with abundance curve of the elements in the earth crust. According to the weight percentage of chemical elements in the body, this can be divided into major and trace elements. Major elements are the highest, which accounted for above 99% in the human body^[8]. Major elements is atomic number small in the periodic table of elements, including H, C, N, O, Ca, P, K, S, Cl, Na, Mg, Si; trace element are the lowest, which maintain the normal function of human body, including Fe, Cu, Zn, Mn, Co, I, Mo, Se, F, Cr, V, Ni, Br; those element accounts for about 0.025% of body weight. Research shows that the major elements changes little in each circle, except the atmosphere outside, such as Si, Ca, Mg, K, N. The trace elements changes big in each circle, which are different and varied. Now, there is found that nearly 20 kinds of elements close correlation with human health. According to its role in the pathology, which can be roughly divided into 4 categories: (1) elements is involved in various human enzymes, such as Fe, Cu, Zn, Mo, Se, Mn; (2) catalytic elements, such as I, Cu, Ca and Mn, Cr, Co, Ni; (3) elements enhance the immunity function of human body, which improve resistance disease, such as Zn, I, Se, Ti etc; elements are contribute to protection cardiovascular, such as K, Na, Li, Ca, Mg, Ti, V, Si, Fe, Cu, Zn, Cl, C. one word, Some elements has a variety of functions for human health. In addition to the above, there are manganese, cobalt, vanadium, nickel, molybdenum, bismuth and other metal plays a very important role in the body. For example, manganese and human metabolism are closely linked. If manganese deficiency manifested as growth retardation, weight loss and low cholesterol, and which can cause bone deformity. Vanadium and diabetes, high blood lipids, rheumatism, tuberculosis and other diseases, the bismuth and stomach disorders, cobalt and lack of hypertension blood vitamin B₁₂ lead to tube disease. Molybdenum is an anti-cancer element, which cause many cancers, such as esophageal cancer, liver cancer, colorectal cancer, cervical cancer, breast cancer.

Humans upon the surface of the earth lived, who has established very close relationship with the surrounding environment in the process of evolution, this relationship makes human and creatures has always maintained a certain dynamic equilibrium with crustal material. Similarly, changes of sports environment must affect the changes of chemical elements content in the human body. Human body is always regulation themselves from the inside in order to adopt changing in sports environment. Although the human body regulation function is critical in some, when the content of chemical elements under or over the range of the sports environment, the human body and the sports environment balance is destroyed. Another word is that when the one or several chemical elements is too little (too much) in

sports environment, and reaches a certain limit, which will affect human health, and even leads for some endemic diseases and epidemics. Although the content of trace elements is small in the human body, which play a key role for the human body in the biochemical processes, is the main component of enzymes, hormones, vitamins, and nucleic acids, sustain metabolic in life processes.

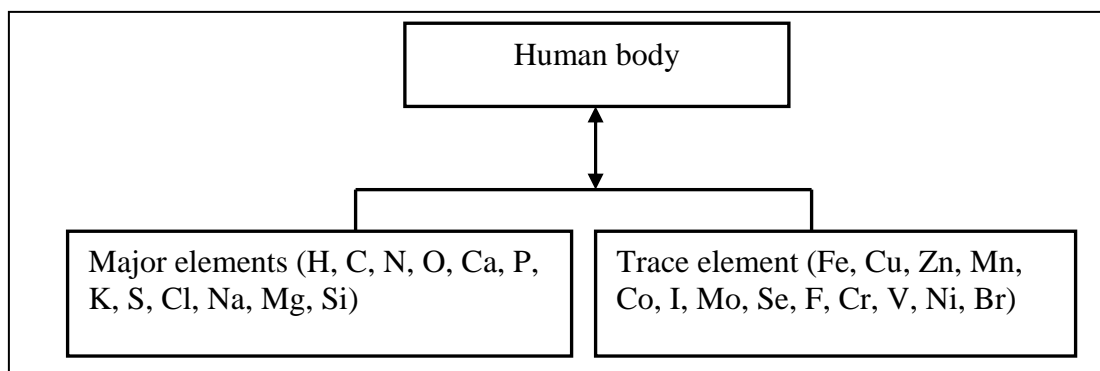


Figure 3 : Chemical elements and human body

Measuring the effect of chemical elements on human health in sports environment

Numerous studies show that a variety of diseases is relate with the levels of trace element in human body. Sometimes, trace elements imbalance can cause of the disease, and is the characterization of disease. Therefore, trace elements which the diagnosis of some diseases basis on, as measures to preventive and curative. The hair can combine with the sulfur based keratin in hair firmly, because has a special affinity for certain metallic elements. The metal is accumulated in the hair, low metabolic activity of hair, then product metal metabolism. Therefore, the content of trace elements can reflect the state of accumulation, intake and metabolism elements in hair for quite a long time, and reflect the content of trace elements in the body. One word, the content of trace elements in hair is a good correlation with in the body. The content of trace element can measure the content of trace elements in the human body, he degree of pollution in sports environmental and the harm for human body.

Third, strengthen environmental protection, and improve the level of health

Conditions and material changes in the natural environment, which will cause change element geochemical in environment. If elements is too much, or too little, or imbalance, will affect on the human body leader to poisoning or cause the disease. In the natural environment, when some elements are too high in water and soil where a local or regional, which will make the content some elements in local water and plants too high. These bring negative effect on health of the local crowd. In a certain historical period, Content of chemical elements where a particular area in nature environment is relatively stable, and the motion of matter is absolute. At same time, the content of chemical elements is also changing in the environment.

The human continuous transform the nature conditions in the long historical process, which in order to improve the conditions of living and working. At same time, human action also brings on different degrees of environmental pollution and destruction. Pollution and destruction of the environment affect human production and life in turn, and directly threat to human health and survival. Especially, since the modern industrial development and the exploitation of mines, continuous discharge of "three wastes", pollution environment lead to the drastic changes that the content of chemical elements. The changes that content of minimal will pollute environment, such as F, I, Ca, P, Cr, Al, Gg. The harm of pollute for human body harm, include acute, chronic, latency and other harmful, which causing great damage to human. Therefore, human should strengthen the monitor of environmental, environmental protection, and environment improves, keep dynamic balance the chemical elements of human and environment in certain. Then protect the health of the human. Scholars study the relationship between environmental pollution and human, which became the key task for the pollution. Now, he Relationship between Chemical Elements and Human Body Health is main task in new field.

CONCLUSION

First, carry out the guiding ideology that “health is first”

Teacher should pay students attention to relate ship of sports environment and health. We should warn students that they are in the growth stage, who should maintain the good eating habits, in order to balance of nutrition, energy and the trace elements in sports education. Teacher should Culture students good Eating habits, avoid monotonous food species, is order to ensure the balance of trace elements and nutrition in the human body.

Second, Proper nutrition is the basis of sports training

Scientific nutrition is the basis of high quality training, which can improve ability of the movement. Any nutrient deficiency (or excess) would affect the function of psychological and physiological in human body, and athletic state. One word, scientific nutrition affect on the play of sports ability.

Third, choose Different kinds of food

Students can choose different kinds of food which produces on different climate region, such as edible grain, fruits, mineral water, herbs and so on, in order to adjust the balance of trace elements in human body. Students Edible fruit and vegetable which is locally produced products, natural foods, isn't processed food, contaminated food, expired food and spraying pesticide food in short term. Students can choose different kinds of drink, which is rich in trace elements, such as iodized salt, iron and zinc salt, mineral water, remedy defect low content of some essential in some areas.

All in all, Scholars should be paid attention to the metabolic balance chemical element and health. Trace elements intake of in order to health, beware of toxic elements. With the coordinated development of human living, and students pay attention to their nutrition to health and longevity in sports environment.

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