

2014

# BioTechnology

*An Indian Journal*

FULL PAPER

BTALJ, 10(9), 2014 [3353 - 3358]

## Study on the relationship between chemical elements and human health in sports environment

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### ABSTRACT

The correlation of crustal elements and elements of life have some typical local disease source analysis, which reveals the geochemical elements in sports environment and imbalance harm to human health, and pointed out the factors that influence the balance of trace elements in human body. Finally, propose optimization and utilization of geochemical environment is important measure to maintain the balance of trace elements in human body the protection of human health. The nature of the relationship between human health and physical education environment is a chemical element, which through the soil, air and water sports environment and people directly, so the chemical elements in the physical environment and human health. The content of chemical elements is in the human body and physical environment, and the composition and content of some chemical elements in sports environment will affect the physiological function and growth development of the human body.

### KEYWORDS

Trace elements; Human health; Endemic disease; Influencing factors.



## INTRODUCTION

Since the middle of the twentieth Century, with the global environmental pollution, a series of pollution incident, influencing geochemical environment on human health has aroused the concern of the whole society and become an important field of environmental geochemistry. In this regard, Britain, the United States, Germany, Japan and Finland have studies. Since 1980 China has also carried out a great deal of research and achieved some success, such as Tan see to 1989 published the "people's Republic of China endemic diseases and environmental atlas", Li Jiayi and Wu Gong founded in 1999 published "China ecological environmental geochemical Atlas". These results confirmed that there is a close relationship between trace elements and human health and geochemical environments. The research on the relationship between trace elements and human health, can provide scientific basis for protection of human health, effective prevention and control of endemic diseases

Chemical elements are the basic units of human body. More than 90 species of elements present in the earth's crust, in the human body has been detected in 81. In twentieth Century the beginning of the 70's, to the survey of 220 Britons in the blood more than 60 kinds of chemical elements of the Hamilton, in addition to C, H, O, N and Si, the content of other elements abundance and corresponding crustal elements has good correlation. The crustal abundance control elements of life required a phenomenon known as "the abundance effect". "Abundance" effect reflects the biological and environmental components there is a close relationship between elements, but also reflects the dynamic balance between biological and physical. According to the content of the human body elements, it can be classified as major elements (accounts for the total 99.95% elements, including: O, C, H, N, Ca, S, P, Na, K, Cl and Mg) and trace elements (only half the weight of 0.05% elements, the World Health Organization recognized the human body essential trace elements: Fe, F, I, Cu, Zn, Se, Mo, Mn, V, Cr, Co, Ni, Sn, Si etc.). The formation of trace elements in the human body a variety of enzymes, coenzymes, vitamins, hormones and nucleic acids, physiological function has a specific, proliferation, and cellular metabolism are closely related

### THE RELATIONSHIP BETWEEN PHYSICAL ENVIRONMENT AND THE HEALTH

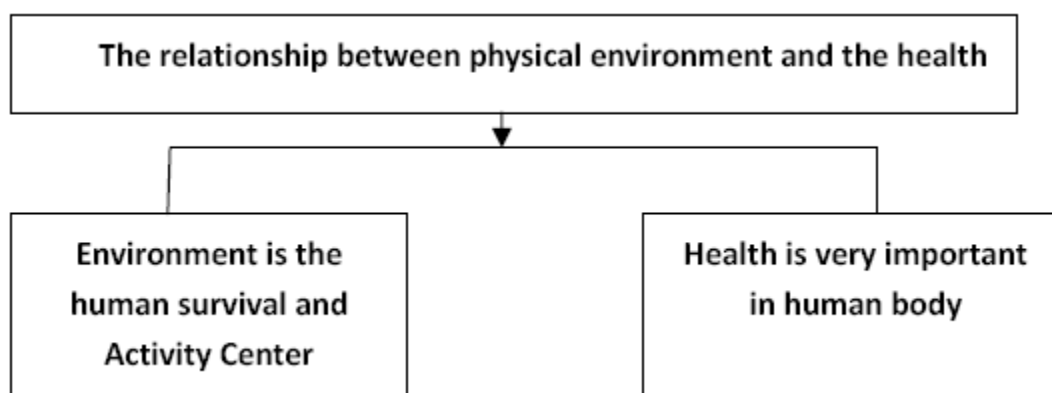


Figure 1 : The relationship between physical environment and the health

#### Environment is the human survival and Activity Center

Environment is the human survival and Activity Center for the surrounding circumstances, namely the human survival and engaged in various activities of the environment. Physical environment is the sum total of human sports refers to the activity as the center of the natural environment and social environment and sports related factors. Physical environment is the natural environment and social environment of intermediary, is a product of human being in the better physical fitness, sports, entertainment and sports competitions and the active use of the environment, to adapt to the environment and transform the environment. Physical environment to people or groups of human physical activity as the center, with long-term nature, complexity and diversity.

The World Health Organization believes that "health is a physical, spiritual life, and a good ability to adapt to, and not merely the absence of disease and the weak state of K which is what people say the physical and mental health of a person only in physical health, mental health, social adaptation and moral good health four aspects all sound, is completely healthy people. & ;) 'Sports scholars put the concept of health people to stimulate peripheral special environment adaptability relates in together, think of health "is the modern people can play not seen in daily life inside the strength, speed, agility and durability under special conditions". Heuristic education people usually try to surpass the physiological and psychological. Health is very important in human body

The transformation of human environment at the same time, the human living environment has changed. Because of human to nature for material increases day by day, into the natural environment of the waste is also increasing, so as to achieve not accommodate natural, so natural in the long history of years to set the balance was destroyed. Modern industrial "three wastes" (waste water, waste residue) pollution of chemical fertilizer and pesticide use and modern agriculture on the environment is well known, the pollution will inevitably cause various elements in environment imbalance, serious when can cause acute or chronic poisoning. Such as five, sixty years in Japan occurred error disease is caused by water pollution of mercury poisoning. In the city, the automobile exhaust lead exhaust and many old houses are still in use will pollute the water plumbing, residents may take excessive amounts of lead, the nervous system, especially the nervous system of young children will produce great harm.

It can also be found to scale a layer grey brown color in the thermos bottle, bottle a kind of apparatus. Analysis shows that the scale contains not less harmful substances, such as pots, such as mercury and arsenic. These harmful substances deposited in the general situation is not easy in the scale dissolving out, but is a acidic substance such as orange juice, beer and other beverages will be let Yi Rong out, so the thermos bottle and water pot should not be used for holding these beverages; long months using aluminum cookware, not only can make the aluminum element in body storage, more disadvantages in isolated people intake.

**SOME IMPORTANT FACTORS IN SPORTS AND HEALTH**

Our environment has been widespread concern in modern human society, as we all know, the main factor causing the global ecological crisis as the chemical factors, but the most important means to change, transformation of the environment is the chemical method. The composition and content of chemical elements of sports environment in soil, air, water and other factors which might affect the physiological function and growth development of the human body.

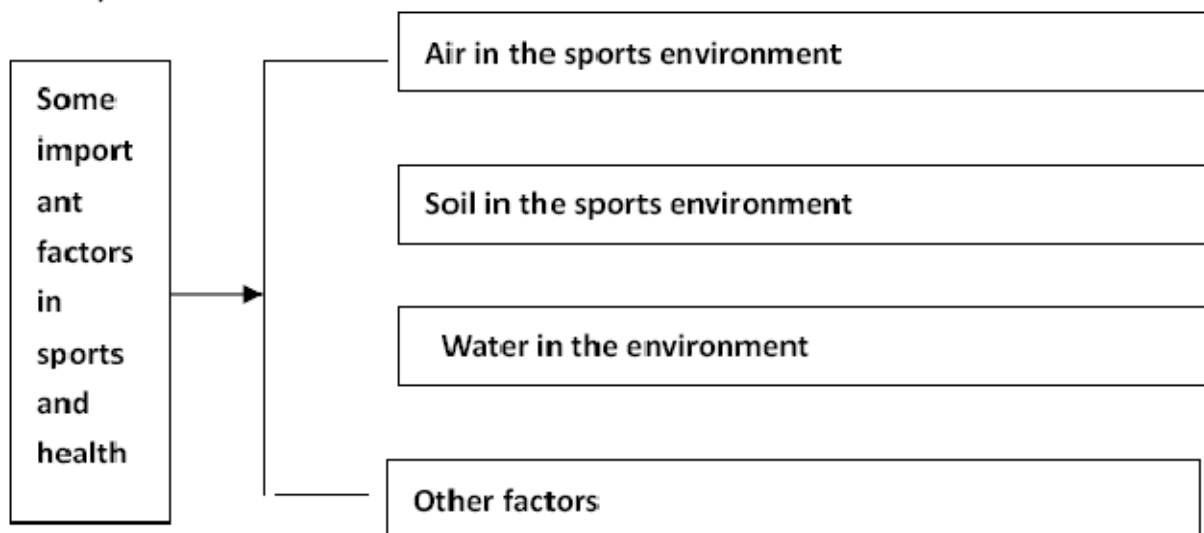


Figure 2 : Some important factors in sports and health

### **Air in the sports environment**

Air is essential to all living, and atmospheric pollution gave everything especially human pose a serious threat to the survival. Air pollution comes from two aspects of nature and human activities. But human activity caused by pollution has far exceeded the nature formed pollution. Human activities leading to the main source of air pollution is to deal with the incomplete combustion of the fuel and the pollution source of the poor. Pollutant emissions from human activities of diffusion to the atmosphere when the concentration of pollutants in excess of atmospheric self purification ability constitutes atmospheric pollution, directly or indirectly affect the health of human body. The pollutants are more attractive L sulfur dioxide, nitrogen oxides, total suspended particles, sulfur oxides, dust, dust, trace elements and organic pollutants.

### **Soil in the sports environment**

Soil is a natural body derived natural geographical environment, is the combination of inorganic and organic community hub. Play an important role in the survival and mineral elements in soil on the human body. For example, phosphorus, calcium and magnesium content of chemical elements in soil area, human body more tall and long legged characteristics. Our tall strapping more than in the north, while the southern region of the human body is small, the main reason is that the calcium and magnesium in Southern soil loss, the content of effective phosphorus is generally low.

### **Water in the environment**

Water is composed of two kinds of chemical elements B, @, is the most active factor in sports environment, plays an important role in the environment. Water and air contact each other, determines the quality of physical environment. Water nourishes the physical environment of life; there is no life without water, human health will be impossible. IJ% of chemical elements and human health both soil, air or water, the essence of the relationship between human and physical environment are chemical elements. The human bodies carry out the exchange of substances through the metabolism and the surrounding environment. Research results show that the human body contains almost all the elements of the periodic table of the elements.

In twentieth Century 90, the United States geochemists found abundance curve elements contained in the human body, have a lot of similarity and abundance curve of the elements in the earth crust. The content of chemical elements in the body, according to the weight percentage can be divided into major and trace elements. Major elements in the human body can be accounted for the highest, human '(above. They are elements of the periodic table of elements of atomic number small. Trace element refers to the human body to maintain the normal function of essential elements; the body weight of about "?!" & (. Research shows that the major elements in each circle @ except the atmosphere outside the A changed little trace elements varied.

Recently has been found near. Elements closely related to human health? According to the elements of their role in the pathology can be roughly divided into% class B is involved in various human factors; Enhance immunity function, improve disease resistance elements; 89, 06; and, D4; contribute to cardiovascular protection element. Some of these elements have a variety of functions for human health. Humans upon the surface of the earth to survive, so in the process of evolution with the surrounding environment has established very close relationship, this relationship makes people and creatures with crustal material has always maintained a certain dynamic equilibrium. Similarly, changes in physical environment, is bound to affect the content changes of chemical elements in the human body, in order to maintain this balance, the body is always from the inside regulation themselves with changing physical environment. Although the physiological regulation functions is a critical content.

### **Other factors**

Measuring the effect of chemical elements in sports environment on human health research shows that a large number of related diseases and the human body trace element levels, sometimes trace elements imbalance is the cause of the disease, sometimes the imbalance of trace elements is the

characterization of disease. Therefore, trace elements can be used as the diagnosis of some diseases or disease prevention and treatment on the basis of the section. FGH because the hair has a special affinity for certain metallic elements can combine with thiol keratin in hair firmly, make the metal accumulation in the hair, the hair is very low metabolic activity, is the end product of metal metabolism. Therefore, the content of trace elements in hair can reflect the accumulation, intake and metabolism elements for quite a long time, reflect its content in the body, there is a good correlation between? So, trace elements content in hair can be used as a measure of the trace elements in the human body content level, the sports level of environmental pollution and to the human body the harm degree.

But when the physical environment under or over the range of content, that is to say, when the physical environment in one or several chemical elements of too little, too much, and reaches a certain limit, will make the human body and the physical environment balance is destroyed, cause human health is affected, and even the formation of some endemic diseases and epidemics. In particular, the content of trace elements in the human body is small, but the biochemical processes of the human body can play a key role, is the main component of enzymes, hormones, vitamins, nucleic acids, metabolic processes to sustain life.

## **THE ESTABLISHMENT OF PREVENTIVE MEASURES, WHICH WILL IMPROVE THE PEOPLE'S HEALTH**

### **Spirit control**

Modern human needs can promote the philosophy of human sustainable existence wisdom to conquer the fluorine historical enlightenment people, scientific research is arduous and complex, only in the scientific world outlook and methodology to guide practice, to reveal the laws of nature, in order to effectively transform nature, the benefit of mankind; man and nature dominated by nature the same, only to follow and adapt to the laws of nature, do the unity of man and universe, to be creative with scientific attitude, to open up the courage to explore the unknown.

Proper nutrition is the basis of sports training, there is no scientific nutrition, no high quality training, there will be no movement ability. Any nutrient deficiency or excess would affect the psychological and physiological function of human body and athletic state, thereby affecting the play sports ability. Can choose different climate region produces edible grain, food, fruits, mineral water, herbs and so on, in order to adjust the balance of trace elements in human body. Edible some non locally produced products, as far as possible, eat natural foods, eat less processed food, not eating contaminated food, expired food and short term spraying pesticide is sold fruit and vegetable food. Choose to drink, food rich in trace elements in food, such as iodized salt, iron zinc salt, mineral water, low content of trace elements in defect of some essential remedy in some areas. In a word, in order to health, attention should be paid to the metabolic balance chemical element, pay attention to intake of trace elements, beware of toxic elements. Only with the coordinated development of human living environment, physical environment, and pay attention to their nutrition to health and longevity.

### **To improve the environment, pollution control and resource utilization**

China has a vast territory, around the rock, soil and water resources and economic level of different endemic is more serious, and the region, range is wide, population number of threatened. It is harmful to human health and hinder the development of economy, as in high fluoride areas of contact fluorine, over the years, increase the prevention of endemic efforts have been the party and the government, paid a great deal of manpower and material resources, but still not completely solve the problem for example, Puyang City, Henan province Henan province is one of the drinking water type of endemic area of serious, belongs to the shallow high fluorine groundwater type wards, ward, a popular high strength.

Results the detection in 2010 and 2011 indicate that agricultural water there are still a part of people drinking high fluorine water, should cause the leadership at all levels and relevant departments attention. Therefore, it is necessary to increase the intensity, stove improvement, adjust measures to

local conditions, rational planting, and effectively reducing fluoride damage, reduce fluorine pollution. For difficult to retrofit, abnormal trace element content, not suitable for residence to take the ecological immigration measures to improve the environment, improve people's health level. Environmental protection can be compared to the human ecological system of the liver and kidney, etc. it was sick or health crisis when efforts to heal, although it is on offense, therefore, we should learn to protect the environment, increase the awareness of disease prevention.

### **Carry out health education, reasonable diet nutrition balance**

"New Horizons" for human health is the twenty-first Century health care strategy program proposed by the World Health Organization, the health promotion and health education as the main method of human health protection in twenty-first Century. Through the health education activities in various forms, improve the cognitive level of people, the way to correct and change people wrong or unhealthy behaviors, advocate balanced diet and healthy lifestyle. Improve the awareness rate in population in endemic prevention knowledge, dietary nutrition can't reduce the prevalence rate of dental, but can reduce the severity of dental. A reasonable diet assort or arrange in pairs or groups, positive calcium balance, consciously maintain nutritional balance, prevention and control of diseases. In our country, "health for all" on the road is still a long way to go, public health is sensitive to reflect the social and economic development, is a global challenge confronting the whole of mankind. If we can persevere, the scientific understanding of the relationship between trace elements and human health, science, and take effective measures to resolve the problem, can the health.

## **CONCLUSION**

The correlation of crustal elements and elements of life have some typical local disease source analysis, which reveals the geochemical elements in sports environment and imbalance harm to human health, and pointed out the factors that influence the balance of trace elements in human body. It is very closely linked the presence of chemical elements and human health. Intake and balance of trace elements for human health affect the local disease is the main factors. As long as the scientific understanding of the relationship between trace elements and human health, we must strengthen the geochemical environment and nutrition knowledge, to find the major part of health, and take scientific and effective measures to solve the concrete problems, persevere, which will overcome the disease, access to good health.

## **ACKNOWLEDGEMENT**

This paper is supported by the reform project of Northwest A&F University (No.JY1302140).

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