

## **Research on the long-term effect of health food on track and field athletes.**

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### **Abstract**

**According to the popularization of sports nutrition knowledge and promote the cause of our country sports nutrition needs, expounds the new concept of sports health food, the development of sports health food abroad, the domestic market prospects for development, and cultivate the status quo. Sports nutrition supplements are more and more accepted by the public in alleviating fatigue and enhancing athletic performance with appropriate usage. Varied sports supplements are developed to meet various requirements. This article reviewed recent advances in the effects of major sports supplements on athletic performance. For sports health food which has been basically mature food system in more than a decade in domestic has made the detailed elaboration. These big good situations indicate the better future of our country's sports health food market.**

**Keywords:** Health food, Hemoglobin classes, Athletic performance, Track and field athletes.

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### **Introduction**

With the rapid development of undertakings of physical culture and sports, the sports competition has become acuter. How to improve the ability of the movement of Track and Field Athletes, has become the focus of scholars at home and abroad increasingly, reasonable nutrition is one of the focus of reasonable nutrition, although can't replace training, reasonable nutrition is the base to ensure good health and sports ability of Track and Field Athletes [1]. Any lack or excess of nutrients will influent the health of Track and Field Athletes, physiological and competitive state [2]. Competitive sports training on the Track and Field Athletes' physical and physiological load demand is extremely high, Track and Field Athlete's daily nutrition, besides must meet the requirements of carbohydrate, fat, protein and other nutrients, also need to according to different kinds of sports, to supply some special nutrients or dietary ingredient [3]. Reasonable use of sports nutrition supplements, will promote the health of Track and Field Athletes, improve sports ability, and will not cause harm to the physical and mental health of Track and Field Athletes [4]. In this paper, the long-term effect of sports nutrition supplements to the movement ability has been summary reported. In China, sports health food had not clear definition, but foreign scholars discuss that sports health food is used exclusively for Track and Field Athletes and does not contain prohibited by the International Olympic Committee (IOC) of doping substances [5], which are made of proteins, amino acids, creatine, carnitine, vitamins and minerals these kinds of specific function food. This study was conducted to observe

the level change of hemoglobin, red blood cell, hematocrit, mean corpuscular hemoglobin concentration of the Track and Field Athletes taking blood enriching nourishment during training.

### **Materials and Methods**

During our 11 months of training on track and field Track and Field Athletes in Shanghai, Track and Field Athletes have taken blood nourishment, the change of index of hemoglobin, red blood cells, red blood cells deposited, average red blood cell hemoglobin concentration observed. Blood nourishment have been have been regulated in groups according to the change of the indexes such as hemoglobin combining training. The study objects are track team players in Shanghai, who were extracted by Track and Field Athletes' requirements: second class above, healthy body, no organic heart disease, and bear the provincial games medals. Altogether for 16 people, male 8 people, average age ( $15 \pm 2$ ), female 8 people, average age ( $16 \pm 3$ ), training fixed number of year ( $2.5 \pm 0.5$ ) years. Taking sports health care products, in different training period of 11 months in a row, according to the research progress and increase of funding and 16 players take the period as well as the kind of blood type of health care products, respectively is: three to four months: Changbai Jing Xianling oral liquid (The active ingredients is salidroside Liaoning Xinghai Pharmaceutical Co., Ltd. 6/d/person); 5 months: Changbai Jing Xianling oral liquid (6/d/person) 2 raw blood iron (%grain/d/person); Six or seven months: beast sugar pump (4 packages/d/person) 2 Changbai Jing Xianling oral liquid (6/d/person) 2

raw blood iron (%grain/d/person);8 ~ 12 months: beast sugar pump (4 packages/d/person) 2 Changbai Jing Xianling oral liquid (6/d/person) 2 raw blood iron (3 pills/d/person) 2 whey protein, etc. The nutrition drugs were purchased from health bit sports science and new technology development company in Beijing.

**During test:** take a week for a complete blood count test, and test during the previous did not take a supplement of 16 of the whole blood indexes were basic value for reference, the priority after the supplement of hemoglobin, red blood cells, red blood cells deposited, the change of the average red blood cell hemoglobin concentration index, the test time is mainly in one morning of Monday to Friday, each finger blood 20 ~ 30μL, testing instrument is the ABX MICROS60-OT automatic blood counting instrument (Ji'nan Bolai Biotechnology Co. Ltd.).

**Main observation indexes:** hemoglobin, red blood cells, red blood cells deposited, red blood hemoglobin concentration, etc. Statistical analysis: statistical software SPSS12.11 is used to analyze data, statistical processing by the author, and use the average value of 5 tests.

### Results

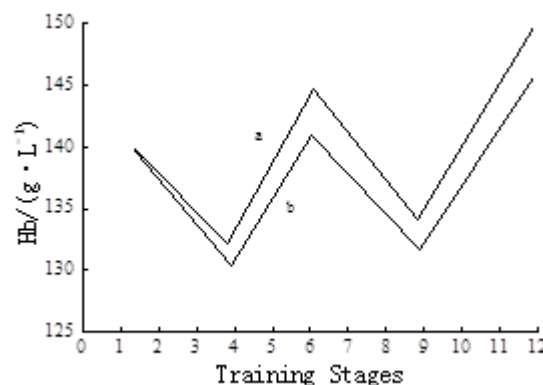
The effect of Changbai Jing Xianling, raw iron, with blood sugar, whey protein, blood tonic supplement lycopene combined are the best, basic value of hemoglobin is improved relative to the average value: male 11 g/L, female 9 g/L (P<0.01), the number of red blood cells in female had increased obviously, and it is  $0.32 \times 10^{12}L^{-1}$  more than its basic value.

**Table 1.** Basic values and average values of each index after taking healthy food of male and female track and field athletes.

Gender	Measure time	Hb (g/L)	Rbc( $1 \times 10^{12}L^{-1}$ )	MCV	MCHC (g/L)
Male	Basic value	142 ± 15	5.10 ± 0.34	0.41 ± 0.01	423 ± 56
	3 ~ 4 month	144 ± 23	5.19 ± 0.35	0.42 ± 0.01	425 ± 57
	5month	147 ± 24	5.25 ± 0.39	0.43 ± 0.02	426 ± 58
	6 ~ 7 month	149 ± 24*	5.28 ± 0.41	0.44 ± 0.02	429 ± 60
	8 ~ 12 month	154 ± 25	5.33 ± 0.42	0.46 ± 0.02	432 ± 61
Female	Basic value	130 ± 12	4.27 ± 0.30	0.38 ± 0.01	343 ± 31
	3 ~ 4 month	132 ± 15	4.35 ± 0.35	0.38 ± 0.01	351 ± 56
	5month	135 ± 16*	4.40 ± 0.38	0.39 ± 0.02	354 ± 61
	6 ~ 7 month	137 ± 18*	4.53 ± 0.42	0.40 ± 0.02	352 ± 56
	8 ~ 12 month	139 ± 13	4.59 ± 0.46	0.40 ± 0.02	353 ± 60

The composition and physical characteristics of hemoglobin, red blood cells and internal environment factors and features of the training these aspects have to be fully considered to improve athletic ability of players. Descriptive statistics into 16 participants, none of the entire study period missing, and none

of the test data is not included in the statistics. Statistical inference in different periods after taking different blood type of health care products, the changes of various index values are as shown in Table 1 and Figure1.



**Figure 1.** Comparison of hemoglobin in different training stages between basic and control values.

### Discussion

Hemoglobin is taken as a very important function indicator by track and field events especially such as middle-long-distance aerobic endurance sports, because the hemoglobin in the human body for oxygen transport plays a central role, which directly affects the ability of aerobic exercise [6]. Sports cause change of hemoglobin, in this study the test values of hemoglobin is changing every week, and the influence of exercise intensity and exercise is very big, the more load in training in one week, the greater the distance training is, the more the hemoglobin fluctuations are, and it is mainly a downward trend [7]. Movements that cause the main reasons for the lower hemoglobin are 3 kinds: synthesis, physical hemolysis, chemical hemolysis. In order to maintain and improve the Track and Field Athletes' hemoglobin, to keep the sport ability, taking a certain health care food is very necessary. To analyze blood type of health care products, the Changbai Jing Xianling oral liquid is first selected, because of its good compatibility of traditional Chinese medicine for blood, its main composition is rhodiola, ganoderma lucidum, desert cistanche, ginseng, a fairy spleen, etc., these Chinese herbal medicine may induce body hematopoietic stromal cells and spleen cells produce hematopoietic growth factors, such as promoting the proliferation and differentiation of hematopoietic stem cells and progenitor cells to produce red blood cells.

Sports for a long time will increase the loss of iron; iron is a necessary material for synthesis of hemoglobin [8]. After the analysis of all kinds of iron agent, we detect the blood iron more scientific formula, which is rich in EDTA iron, animal protein iron, lactoferrin iron, vitamin C, folic acid, B12, B6, etc., which are all necessary to synthesis of hemoglobin and red blood cell material [9-10]. Such as folic acid, without it, the red blood cells cannot be matured, so from the beginning of May to early June, with Changbai Jing Xianling oral liquid

(4/d/person) based on add raw blood iron (3/d/person), in order to complement the lack of iron in the body, promote the synthesis of hemoglobin and red blood cell formation. From the result, we can see that the overall effect is better than before, index values of hemoglobin, red blood cells, the red blood cells deposited, red blood hemoglobin concentration are a bit better than earlier, basic values of hemoglobin relative to the average have been increased: male 4 g/L and 5 g/L, are also can basically remain above normal, but there was still decrease of hemoglobin etc. index found in individual players.

According to the analysis of the training content, training load of 8 ~ 12 months is more than latest months, material consumption of each function of Track and Field Athletes in the body is also more, but the effect of the forth kind of blood tonic health portfolio is better than the front three, it also suggests that the forth kind of blood tonic health food combinations are more scientific and effective, that enriching the blood can't single rely on a kind of health care products, from the composition and physical properties of hemoglobin and the internal environment factors and features of the training and other aspects to fully consider, from the point of combination of the above four kinds of nutrition, it is significantly better than that of red blood cells after taking the improvement of the body hemoglobin, red blood cells deposited, the increase of average red blood cell hemoglobin, the author also don't know the reasons.

It is worth mention that the values during training after the supplement of hemoglobin, red blood cells, red blood cells deposited, indices such as red blood hemoglobin value that have been improved is certainly not high than the value on normal condition after taking them, because the training itself is in constant use of hemoglobin, red blood cells, etc., so does it in the other training, to maintain hemoglobin, red blood cells in the course of training equivalent without reducing blood can be thought as there is some effect [11]. Nutritional food can make the body in motion is in good condition, delay fatigue, promote the body's recovery, and improve the ability of sports [12]. Nutritional food has been widely used in the application of Track and Field Athletes and fitness crowd. Therefore, the applications of nutritional food have a good development prospect. considering the Track and Field Athlete special needs (such as anemia, physical strength is poorer, training or competition excitatory different low beverage), Application of nutritional food is increased formation of acidic, choose alkaline drinks. Therefore, the rationality of the application of nutritional food and scientific is an important research subject.

## Conclusion

To sum up, athletic sport is seeking for the maximum expression of individual potential in the competition. In addition to science and hard training, Track and Field Athletes must have a reasonable nutrition support. It is not enough for Track and Field Athletes to get nutrition only from ordinary daily dietary, so extra special nutrients must be added to meet the needs of high intensity training and competition. Sports

nutrition supplements play a very important role on alleviate sports fatigue and improving exercise capacity. It's believed that with the continuous development of sports nutrition, combined with scientific training, sports enterprise will also be up to a new step.

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