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Research Article

The Relationship between Nutritional Supplements and Athlete Sports Ability

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Abstract: To know and analyze nutrition education and nutrition KAB situation of domestic and foreign athletes through expert interviews and literature reviews. Three hundred and seventy nine athletes were interviewed and questionnaire surveyed by nutrition education and nutrition KAB questionnaire and the data were processed by use of EXCEL and SPSS 19.0 statistical software. Their nutrition education and nutrition KAB problems were analyzed by mainly using the conventional percentage statistics, t-test, etc. The idea of nutrition education model suitable for Chinese athletes was put forwarded according to the research results.

Keywords: Athletes, nutritional supplements, sports ability

INTRODUCTION

The expanding dietary supplement industry dramatically impacts athletes who are continually seeking a competitive edge. Krumbach *et al*. (1999), reported that almost 57% of collegiate athletes surveyed reported taking vitamin and mineral supplements. In addition to vitamins and minerals, athletes are experimenting with the latest supplemental trends such as creatine, Hydroxy-Methyl-Butyrate (HMB), Ephedrine and Androstendione (Ray *et al*., 2001).

Massad *et al*. (1995) reported that high school students are also using a wide variety of supplements such as fluid replacement drinks, multivitamins and minerals, vitamin C, protein drinks and carbohydrate loading drinks. Swirzinksi *et al*. (2000) reported that 31% of high school football athletes surveyed were using supplements (Scott *et al*., 1996).

The majority was taking creatine, but others were taking vitamin and mineral supplements, or weight gain products such as HMB and Mega Mass (Swirzinksi *et al*., 2000). Jacobson *et al*. (2001) reported that 79% of male athletes and 65% of female athletes have indicated that they used some type of nutritional supplement during their college athletic career (Smith and Dahm, 2000).

Few other studies have surveyed usage of dietary supplements among advanced or collegiate athletes, who may be more prone to the use of nutritional supplements for a competitive edge. Learning more about the types and variety of supplements high school, collegiate and elite athletes are using, sources of information and recommendations, as well as reasons athletes choose to use particular supplements would help to enable athletic personnel to properly educate and counsel.

Most male collegiate athletes report taking supplements to improve athletic performance and build muscle, while female collegiate athletes report taking supplements because they were recommended by family members and to prevent illness (Sobal and Marquart, 1994). Athletes have reported that they rely on themselves, family members and friends for information and recommendations regarding supplements (Swirzinski *et al*., 2000). Unfortunately athletes seldom seek information from informed sources such as registered dietitians, strength coaches, athletic trainers, or physicians (Weight *et al*., 1988). This leaves the competitive athlete vulnerable to misinformation and inappropriate recommendations, which may lead to health and performance problems or National Collegiate Athletic Association (NCAA) eligibility concerns (Fig. 1).

To analyze nutrition education and nutrition KAB situation of domestic and foreign athletes through expert interviews and literature reviews. The nutrition education and nutrition KAB problems were analyzed by mainly using the conventional percentage statistics, t-test, etc. The idea of nutrition education model suitable for Chinese athletes was put forwarded according to the study.

METHODOLOGY

An experiment: The study researched supplementary motor Nutritional Supplements, observed for Treadmill exercise rat tissues which produced and scavenging free radicals, to reveal the effect of sports nutrition supplements on the antioxidant capacity. Research Methods: 90 Eight-week-old male SD rats divided into three groups randomly, Quiet Control group (C),

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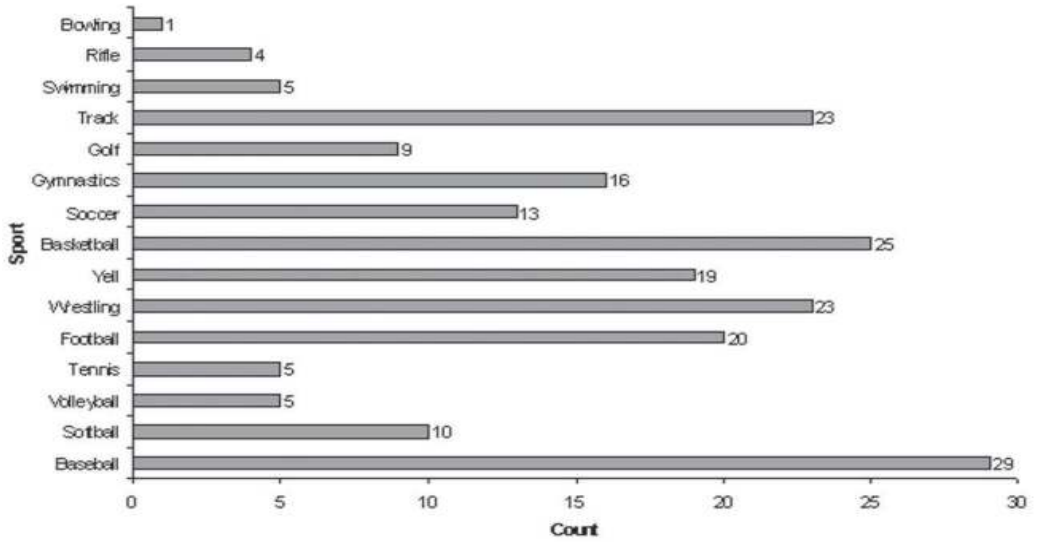

Fig. 1: Frequency distribution for sports, reflects the number of athletes from each sport who participated in the survey

Exercise control group (S), sports medicine group (T). Nutritional Supplements for the amps potential radical agent. Rats have to treadmill training's group and Tgroup' rats running for 3 weeks Incremental Exercise except for Sunday. All the rats killed immediately and-took the liver and skeletal muscle after the last day of training. Each group measured in the quadriceps and liver Malondialdehyde (MDA), Super Oxide Disputes (SOD), Glutathione (GSH) and Glutathione Peroxides (GSH-PX).

EXPERIMENTAL RESULTS

Liver and muscle MDA, 6 and 24 h after exercise, sports medicine group was significantly lower than the control group exercise ($p<0.05$); Liver SOD activity, 1 and 6 h after exercise, sports medicine group was significantly higher than the control group exercise ($p<0.05$), SOD activity in muscle after exercise 1 h sports medicine group was significantly higher than the control group exercise ($p<0.05$), 6 h after exercise, there was a significant difference ($p<0.01$); Muscle GSH-PX activity 6 h after exercise, sports medicine group was significant higher than the exercise control group ($p<0.01$); Liver GSH, 0, 1 and 24 h after exercise, sports medicine group is significantly higher than the exercise control group ($p<0.01$), muscle GSH, 1, 6 and 24 h after exercise, sports medicine exercise group was significantly higher than the control group ($p<0.05$).

Conclusion: In this study, nutritional supplements can significantly reduce the MDA, increased SOD, GSH-PX activity and GSH content in liver and skeletal muscle in rats after exercise, help to improve metabolic disorder caused by the movement of free radicals, help to improve exercise capacity. The relationship of SOD/GSH and athletes are shown in Fig. 2.

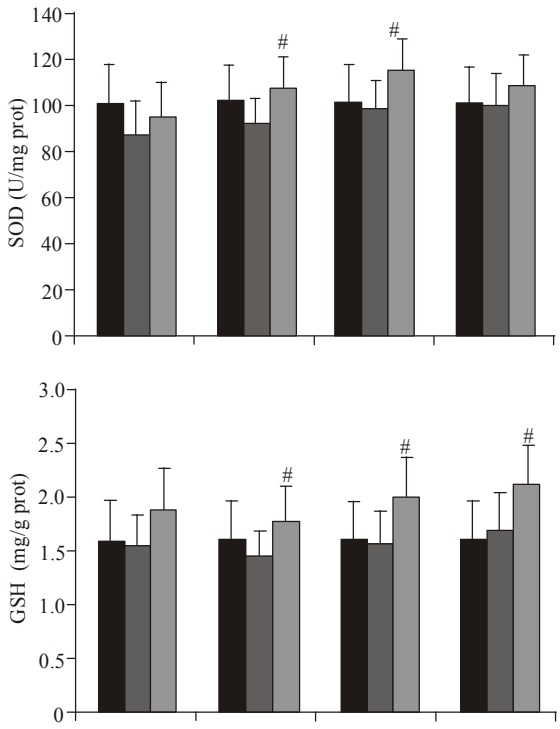

Fig. 2: The relationship of SOD/GSH and athletes

A case of the heel-to-toe walking: The heel-to-toe walking race movement belongs to the long time endurance movement. In the Olympic Games compete, the outstanding heel-to-toe walking race athlete needs two hour much time to complete the 20 km entire journey, the male SOkm heel-to-toe walking race completes the entire journey time near four hours. Besides movement time superior, the heel-to-toe walking race movement also has the unique specification and the strict referee rule, these

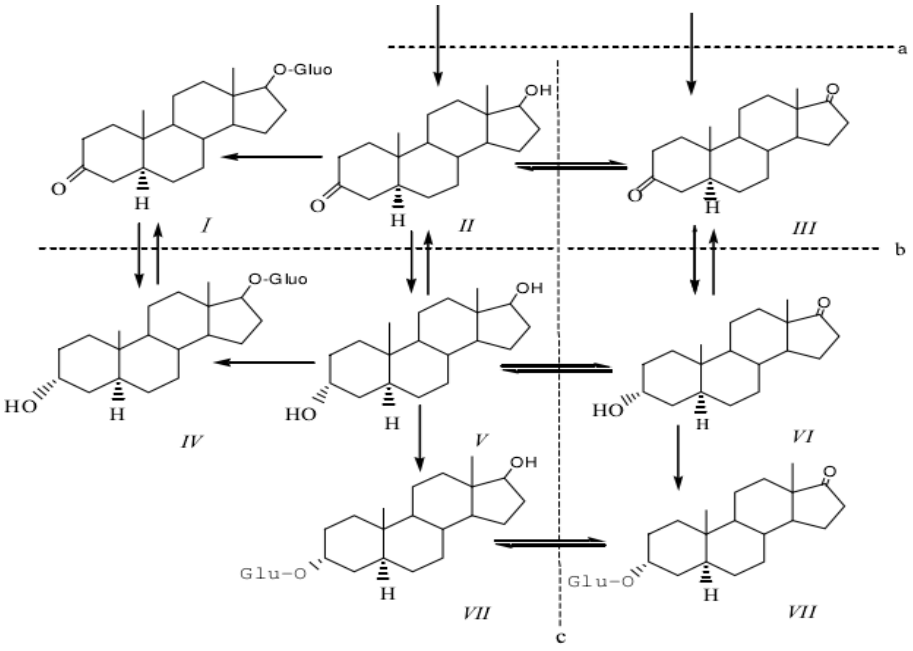

Fig. 3: The process of metabolism

characteristics had decided the athlete in trains and in the competition needs to have the strong will quality, the consummation heel-to-toe walking race technology, the reasonable tactical coordination as well as the comprehensive physical quality Because the playing time is long, in this rate process's energy output also has the change along with the time. In the long time heel-to-toe walking race movement, provides the energy the main material is the sugar and the fat. The heel-to-toe walking race is the typical periodic endurance project, its energy metabolism characteristic has the mix metabolism which oxygen metabolism, the sugar zymolysis and the Phosphoric acid original (ATP-CP) three kind of functional systems have at the same time. The metabolic type along with project distance's increase, to by has the oxygen metabolism mix metabolism process transition gradually primarily from the sugar zymolysis mix metabolism process primarily The long distance heel-to-toe walking race athlete both must have the good endurance ability to be used as the basis and must have the very high speed level. The heel-to-toe walking race belongs to the high velocity endurance project.

Good has the oxygen ability is the heel-to-toe walking race athlete's foundation, but the speed and the speed endurance level decides one of heel-to-toe walking race athlete special movement result important attributes. In the training emphasized after having the oxygen endurance training carries on has the oxygen lack of oxygen mix training, finally carries on ATP-CP and the sugar zymolysis metabolism great intensity training primarily. The outstanding heel-to-toe walking race athlete's speed training is generally after the special training or the great intensity training, in organism occupies certain lactic acid stack under the condition, develops athlete's maximum speed, promotes the athlete speed endurance level enhancement. Therefore, not only in the heel-to-toe walking race athlete must have the very strong durability, moreover trains the load is big, therefore the training to the cardiopulmonary function, the energy metabolism as well as nervous system's request is high (Fig. 3).

The massive movement practice indicated that the high level heel-to-toe walking race athlete carries on the medium intensity the movement training to be small to organism stimulation, very difficult to improve the movement result; But will carry on the great intensity the movement training to cause the athlete body function obvious drop, will affect athlete's training and the competition; How both can the guarantee movement intensity and make athlete's bodily function to restore as soon as possible, has been puzzles athletics sports development the major issue. This experiment uses may raise the athlete blood testosterone level, strengthen the anti-fatigue capability the puncture vine soap glucoside (Kang bit puncture vine soap glucoside capsule) the method which the spirit comes in handy with long Bai Jingxian, simultaneously coordinates the alleviation athletic injury, sharpens the immunity ability a Kang bit lycopene and the Kang bit 100% valley ammonia amide capsule, prevents the mobile anemia's bit hard capsule as well as the enhancement has oxygen rate of metabolism L- the meat alkali to carry on the nutrition to supplement. This experiment's goal is to carry on the function monitoring and the nutrition intervention scientifically to the heel-to-toe walking race athlete,

improves the movement result to provide the experiment to rest on.

This experiment selects the Chinese country heel-to-toe walking heel-to-toe walking race athlete each 12 people, the altogether 24 people race team male, female the athlete altogether cant' on 9 week training, simultaneously and carry on the experiment, carries on the nutrition on, tests athlete's early morning arteries and the blood pressure value in the morning in each day, in 1, 3, 5, 7 and 9 weekends, respectively carries on the routine blood test, the seroimmunity globulin (Igq IgA, IgM), the blood Testosterone (T), the Blood serum Urea Nitrogen (BUN) and the blood serum Creatine Kinase (CK) the value test. Mean values of athletes' stolic pressure in different training weeks is shown in Fig. 4.

The experimental result showed:

- The different movement tonic blends takes may accelerate male, the female heel-to-toe walking race athlete to restore the level in the great intensity training period early morning arteries, this indicated that athlete heart rate idle capacity has the enhancement, is advantageous after the athlete movement the function restoration.
- The different movement tonic blends takes may adjust male, the female heel-to-toe walking race athlete in the great intensity training period blood pressure level, this indicated that athlete cardiac muscle contraction ability has the enhancement, enables its quick adaptation predetermined physiological load of exercise.
- The different movement tonic blends takes may suppress the red cell count which the great intensity training creates (RBC) and the parameter drop, this indicated that the compound tonic may prevent the red blood cell the oxidized damage and the senile advancement, thus has the protection red blood cell structure the integrity.
- The different movement tonic blends takes may suppress the hemoglobin content which the great intensity training creates (Hb) and the parameter drop, this indicated that the compound tonic is advantageous in suppresses the Hb density which the great intensity training creates to drop, improves athlete's function level, adapts the great intensity movement training to organism stimulation.
- The different movement tonic blends takes may adjust the cellular immunity function drop which the great intensity training creates, this indicated that the compound tonic is advantageous in adjusts in the great intensity training athlete cell's activeness, the enhancement organism cellular immunity function.
- The different movement tonic blends takes may adjust the humoral immunity function drop which the great mtensty creates, this indicated that the compound tonic is advantageous in adjusts in the great training intensity training athlete's humoral immunity level.
- The different movement tonic blends takes may raise male, the female heel-to-toe walking race athlete's T level, promotes in organism the protein synthesis and the function level quick recovery, adapts the great intensity training to organism stimulation, enhances organism the motor ability.
- The different movement tonic blends takes may reduce the great intensity training, the next day early morning blood serum CK level, is advantageous in the athlete organism function quick recovery, guarantees the training mission smooth completion.

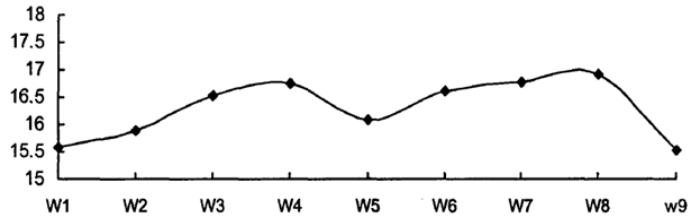

Fig. 4: Mean values of athletes' stolic pressure in different training weeks

Table 1: Dietary supplement usage by division I athletes and comparison by gender

Supplement	Total (%)	Female (%)	Male (%)	p-value
Total minerals	39.1	21.2	18.2	0.020
Calcium	18.8	12.3	6.9	0.004
Iron	10.6	8.4	2.5	0.007
Zinc	7.7	3.9	3.9	ns
Potassium	4.8	1.5	3.4	ns
Total other	27.5	7.9	20.2	0.050
Nicotine	7.2	1.0	6.4	ns
Androstendione	4.8	0.0	4.9	0.005
Fat burner	4.8	1.0	3.4	ns
Glucosomine	3.9	0.5	3.4	ns
DHEA	2.4	0.0	2.5	0.050
Caffeine/aspirin	2.4	1.5	1.0	ns

- The different movement tonic blended takes may adjust the BUN level which the big load movement created to be unusual, reduced athlete's weary degree, had guaranteed the training mission completed smoothly with the athletics level normal display Conclusion: The different movement tonic blends the use to be possible to raise male, the female heel-to-toe walking race athlete's bodily function level comprehensively, reduces the great intensity training the damage which brings to organism; May obviously enhance athlete's Hemoglobin (Hb) the level, increases the athlete to have the metabolism ability; May also adjust in the great intensity endurance movement the immunity level, guarantees the training plan smooth completion. Dietary supplement usage by division I athletes and comparison by gender are shown in Table 1.

CONCLUSION

In this study, nutrition education of Athletes was lacking. Athletes thinking that nutrition cognitive has no roles to sport performance accounted for 43.8% and who had a poor appetite to the nutrition knowledge accounted for 40.6%. This showed that it would be very necessary for athletes to carry out practical and effective nutrition education and establish the correct, view of nutrition.

Athletes have no nutrition books accounted for 55.7% and who chose "basic not reading" nutrition information accounted for 86.4%. The probability was also one of the factors lead to low nutrition KAB level of most athletes. It showed that how to compile readable nutrition books athletes was very important. Athletes haven't systematic learn Sports Nutrition accounted for 8% and who haven't hold lecture on nutrition knowledge accounted for 68%. The two ways lol, were the most accurate dissemination of nutrition knowledge and could effectively avoid misleading by some false advertising. So we need to improve the probability of two ways.

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