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Effect of one period of training on hemoglobin, hematocrit and RBC of athlete girls

Moosavizademonir

Department of physical education, Branch Rasht, Islamic Azad university, Rasht, Iran

ABSTRACT

The aim of this research is finding the effect of one period of training on hemoglobin, hematocrit, RBC of athlete girls. . In this research effect of eight weeks aerobic training which including 40 minute running twice a week with 60 to 65 percent reserve heart rate on HB, HCT & RBC were examined. 13 athlete girls were selected none randomly. The samples did not have any disease. They were not smokers. The samples are asked that they go to the laboratory in 9 clocks at morning for performing blood examination. Getting blood sampling was performed in seventh day of girl s follicular period. Training was eight weeks & twice on each week. Each session were 40 minutes running with 60 to 65 percent of reserve heart impulse for girls. Automatic machines for measuring of hemoglobin, hematocrit & RBC were used. Raw information was considered by using of descriptive statistics methods which conclude of tables, means & standard deviation. Also deduction statistic method which was concluded student of associate groups was considered. For refusing or accepting of hypothesis level ($< 5\%$ or $= 5\%$) was considered & spss was used. It was seen significant decrease in HB, HCT, and RBC in athlete girls. ($P > 5\%$)

Key word: hemoglobin, hematocrit, RBC.

INTRODUCTION

Exercise & physical activity are essential factors on health. Exercise promotes human ability in contrast to psychological, social, economic problems. The ability of physical activity is varied in people. This variety has direct relation with organs of body by activity. One of these organs is blood circulation & its transferring components of oxygen which has an important role during & after adaption with activity (1).

Blood is a tissue. The essential act of blood is to maintaining of hemostasis of internal tissues of body. A lot of actions are done in the body which change the internal environment of chemical

component, for example some changes will occur by contraction of muscles (2). Like others of body organs, blood does not give the same response to every physical activity. Kind of activity, intensity & duration are situations which body show effective reaction from itself (3).

Hematological indexes such as HB, HCT & RBC have basic duty for transfer of oxygen for active tissues. Therefore body capacity & Vo₂ max is dependent on transferring of active oxygen to active tissues. Therefore the importance of hematological indexes in providing of consumes oxygen in active tissue & consequently in body efficiency is more shown (4).

Observations show athletes which do exercise trainings well, have more HB & RBC concentration in comparison to none active persons (5). Different researches show paradox results in this area.

Therefore, one question which always repeats is that: do training program cause changes in blood hematological indexes or not?

MATERIAL AND METHODS

13 girls (18 to 22 years) were selected unrandomly from university students. The samples did not have any disease. They were not smokers. The samples are asked that they go to the laboratory in 9 clocks at morning for performing blood examination. Getting blood sampling was performed in seventh day of girl s follicular period. Training was eight weeks & twice on each week .Each session were 40 minutes running with 60 to 65 percent of reserve heart impulse for girls.

Raw information was considered by using of descriptive statistics methods which conclude of tables, means & standard deviation. Also deduction statistic method which was concluded student of associate groups was considered. For refusing or accepting of hypothesis level ($< 5\%$ or $= 5\%$) was considered & spss was used.

RESULTS AND DISCUSSION

In table1 is shown t value, free degree & p value of blood samples in related to hematological indexes such as HB, HCT & RB. AS is shown in training causes significant decrease in HB, HCT & RBC in athlete girls. Increasing of Plasma volume causes dilution of blood & as a result decreasing of RBC. Decreasing of RBC can be from two factors: 1 -decreasing of RBC production because of nonexistence of makers of RBC. 2 – Destruction of RBC in effect by foot mechanical shock & damaging of old RBC. Decreasing of RBC causes decreasing of HB. It seems hematological indexes decreasing of plasma volume, which is a useful mechanism is agreement with endurance situations (6). The decrease of HB is because of increasing of plasma volume. The probably decrease of HB concentration can be in related to RBC damaging (hemolysis).In some exercises like running, the cellule membrane will slit & it's HB& enzymes will free. AS a result RBC will analysis faster. RBC & HB is dependent on iron existence. Without iron, RBC metabolism will derange (7).

It seems, hematological decreases by effect of endurance exercises is due to plasma volume increasing which a useful mechanism is in related to adoptions to endurance situations. In normal

phase this situation is because of blood concentration decreasing (8). Athletes especially endurance athletes have less HCT & HB in compare to untrained people. On the other hand, when athletes compared with ordinary people, they tend to weak anemia. This is an unreal anemia which is because of aerobic trainings. In this state plasma volume will increase in compare to first state. Dilution of blood cause decreasing in portion of HB, RBC & HCT. On the other hand low HCT in athletes is an untrue anemia (9).

Opposite of existence information, there is one point that is not exactly answer to it: what volume of exercise training intensity can have the best effect on hematological indexes in increasing of probably changes in hematological indexes in increasing of body training & exercise.

Table 1 – effect of training on hematological indexes of athlete girls:

Change reference	T value	Free degree	p	result
HCT (%)	2/313*	12	0/045	no significant
RBC (10¹²/L)	2/710*	12	0/034	no significant
HB (10 G/L)	2/313*	12	0/045	no significant

$p < 0.05$ *

CONCLUSION

It seems aerobic training has essential effect on blood and its components. In this research significant decrease in HB, HCT, and RBC in athlete girls was seen. ($P > 5\%$) It is needed more researches for finding of the effect of training on blood and as a result athlete performance.

REFERENCES

- [1] Suzuki, Mitsumi. Joo, Mi, Hyun. Suzuki, Natsumi. Mesaki, Noboru. (2006). *Japanese Journal of Physical Fitness and Sports Medicine*. Vol 55. No 2, 259-267.
- [2] Ranjeet, S. Ajmani, Jerom, L. Fleg, A. Andrew, Demehin. et al. (2000). Oxidative stress and hemorheological changes induced by acute treadmill exercise. *Ios press*. Volume 28, 29-40.
- [3] Ozlem, Yalcin. Alpaslan, Erman. Sedat, Muratli. MelekBor, Kucukatay. andoguz, K, Baskurt. (2003). *J Appl Physiol*. 94: 997-1002.
- [4] Murray, Kolb, L. Beard, J,L. Joseph, L, J. Davey S, L. Evans, W,J. Campbell, W,W. (2001). *Int J Sport NutrExerc Metab*. 11. (3): 287-98.
- [5] Mahmoud, S. Nagia, Ali and Zeinab. (2005). *Sports Med*. 35(8): 649-670.
- [6] Banifi, M. Fabbro, C. (2006). Hematological parameters in elite rugby players during a season. 58 9 3): 18–3 188
- [7] Karakoc, y. Duzova, H. Polat , A. (2005). *Br j sport med*. 23 (2) 532 - 548
- [8] Suzuki, M.Joo. M. Suzuki, N. Mesaki, N. (2006). *Japanese journal of physical fitness & sports medicine*. Vol 55. No 2. 259 – 267
- [9] Lippi , Giuseppe. Schena, Federico. Franchini, Massimo. et al. (2005). *Clin Journal of Sport Medicine*. 15(5): 356-358.