Effect of 8 week national team camp training over the blood values of boxers

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Abstract

The research group of this research consists of a total of 20 boxers of the sportsmen of Turkey Adults Men Boxing National Team with an average age of 21.65. Intense training programme was performed in eight weeklong camps by the research group; blood samples were taken from the group in mornings on empty stomachs before the camp and after the camp. The data and laboratory results collected before the camp are used as covariant. The relative changes in the data obtained at the end of the camp were analyzed in SAS package programme by using PROC MEANS procedure. The significance level of changes between the two measurements was determined by Paired t test which contributes P<0.05 significance. Statistically significant increment was observed on the glucose levels from the blood parameters of boxers before and after the camp (P=0.0137). Decrement was observed on the insulin levels before and after the camp; but it was not considered as statistically significant (P=0.1337). Increment was observed on the cortisol levels before and after the camp; but it was not statistically significant (P=0.0553). Decrement was observed on the Urea levels before and after the camp; but it was not statistically significant (P=0.0996). Changes were observed on the creatine levels before and after the camp; but no statistical significance was confirmed (P=0.6577). Important changes were observed in all blood values before and after the camp of Boxing National Team Sportsmen, yet only the glucose parameter was of statistically significance. In this regard, we might state that it has important changes over glucose levels of all parameters we examined.

Keywords: national team, camp training, blood, boxers

Introduction

Modern boxing is of England origin and it is known as one of the most popular struggling sports of the World (Ohhashi et al., 2002). In order to obtain top level of performance, the superior performances of sportsmen of nowadays are described as the complete of many physiological, psychological, biomechanical factors (Zorba et al., 1999). The relation between body structure and functions of body has been a research subject in sports researches to this day. The state of the body is widely included in the evaluation of body structure and performance as well as physiological, psychological, biomechanical factors (Viviani, Baldin 1993). The approach of physiological mechanics is based on two premises. First premise is that the mechanic principles are sufficient to specify the physical activities. Second premise is that the thoughts, ideas and similar mental events are products of the physical activities (Karakaş, Bekçi 2003). It is known that blood parameters change in connection with the intensity, period and type of the physical exercise. During and after the intense physical exercise, individuals indicate changes in blood parameters due to the training status,
environment conditions and diet differences (Şekeroğlu et al., 1997). There are researches stating that blood biochemistry positively improve as a result of acute physical exercise in addition to the researches stating that blood biochemistry positively improve as a result of long periods of physical exercises (Büyükayazi, Turgay 2000; Turgay et al., 2002). It is considered that these differences occur in connection to the intensity, period and frequency of the physical exercise and physical, psychological and condition states of the individuals (Griffith, 2002; Sönmez, 2002; Ergen, 2002; Fox et al., 1999). Researchers conducted determine that the regular physical exercises affect all of the body systems positively and prevent the occurrence of health problems.

In our research, the effects of levels of some blood parameters (Glucose, Insulin, Cortisol, Urea, Creatine) were examined on 8 weeks national team camp trainings of boxers.

Materials and Method

The research group of this research consists of total of 20 boxers of the sportsmen of Turkey Adults Men Boxing National Team with 21.65 average ages. Research group performed intense training programme in eight weeklong camp; blood samples were taken from the group at 07.00 AM on empty stomachs before the camp and after the camp. The blood samples was taken into gel biochemistry tubes via 10 cc injectors; after 10 minutes of waiting period, the samples are centrifuged with Hettich trademark Universal 320 model. Obtained blood samples centrifuged for 5 minutes in 4000 rpm, then they have been taken into ependorf tubes after their serums was separated, they have been stored in the Hettrich firrzer in the Animal Nutrition Department of the Faculty of Veterinary of Firat University at the temperature of -80°C until the analysis time. Insulin and Cortisol levels of blood sample were evaluated with the method of direct chemiluminescence closed system via Siemens trademark Immulite 2000XPI and Glucose, Urea and Creatine levels of blood sample were evaluated with the method of nepholomatrix closed system via Siemens trademark 1800 Advia in the Research Hospital of Firat University. The nutrition and other necessities of the sportsmen were satisfied in the same environment as standard.

The data and laboratory results collected before the camp are used as covariant. The relative changes in the data obtained at the end of camp were analyzed in SAS package programme by using PROC MEANS procedure (SAS Institute 2002). The significance levels of occurred changes were determined by Paired t test which contributes P<0.05 significance.

Results

Table 1: Age, weight, height and BMI values of boxers (n=20)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Age (Years)</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
<th>BMI (kg/cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men ± SD</td>
<td>21.65 ± 2.74</td>
<td>67.44 ± 16.62</td>
<td>174.40 ± 8.13</td>
<td>22.11 ± 0.61</td>
</tr>
</tbody>
</table>

Table 2: Blood levels of sporters (n=10)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before match</th>
<th>After match</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose (mg/dl)</td>
<td>83.47±7.06</td>
<td>89.18±5.56</td>
<td>* 0.0137</td>
</tr>
<tr>
<td>Insulin (ulU/ml)</td>
<td>9.74±2.59</td>
<td>6.81±1.99</td>
<td>- 0.1337</td>
</tr>
<tr>
<td>Cortisol (ug/dl)</td>
<td>15.26±2.94</td>
<td>19.64±2.06</td>
<td>- 0.0553</td>
</tr>
<tr>
<td>Urea (mg/dl)</td>
<td>43.65±3.48</td>
<td>37.94±2.54</td>
<td>- 0.0996</td>
</tr>
<tr>
<td>Creatine (mg/dl)</td>
<td>1.20±0.34</td>
<td>1.22±0.42</td>
<td>- 0.6577</td>
</tr>
</tbody>
</table>

- : P>0.05    *: P< 0.05

In the examinations of serum parameters of boxers before the camp and after the camp, changes were found in serum parameters. According to this, the Glucose levels of 83.47±2.65 ml/dl before the camp and 89.18±2.35 ml/dl after the camp and an increment in the plasma level after the camp were determined (P=0.0137), (P<0.05; Tablo 2).

In the examinations of Insulin serum parameter of boxers before the camp and after the camp, Insulin levels of 9.74±2.59 ml/dl before the camp and 6.81±1.99 ml/dl after the camp and a decrement in the plasma insulin level after the camp were determined.
Yet, the change is not determined as statistically significant (P=0.1337), (P<0.05; Tablo 2).
In the examinations of Cortisol measures of boxers before the camp and after the camp, Cortisol levels of 15.26±2.94 ml/dl before the camp and 19.64±2.06 ml/dl after the camp and an increment between the measures were determined. Yet, the change is not determined as statistically significant (P=0.0553), (P<0.05; Tablo 2).
In the examinations of Urea measures of boxers before the camp and after the camp, Urea levels of 43.65±3.48 ml/dl before the camp and 37.94±2.54 ml/dl after the camp and a decrement in the plasma level were determined. The change is not determined as statistically significant (P=0.0996), (P<0.05; Tablo 2).
In the examinations of Creatine measures of boxers before the camp and after the camp, Creatine levels of 1.20±0.34 ml/dl before the camp and 1.22±0.42 ml/dl after the camp were determined; the change is not determined as statistically significant (P=0.6577), (P<0.05; Tablo 2).

Discussion and Conclusion

In our research which we have examined the blood parameters of Turkish Boxing National Team sportsmen before and after their 8 weeks camp; the average age of boxers was determined as 21.65. As we examined the similar researches in the literature related with the subject; we have seen that they have determined the average age of Turkish Boxing team as 20.77; the average age of Ukraine Boxing team as 20.35 (Çınar et al., 2009); the average age of Azerbaijan Boxing team as 22.66 (Beyleroğlu 1998); the average age of Georgia Boxing team as 24.88 (Çakmakçı, 2000). These results are parallel to our findings. They especially state that the elite level boxers are of 20-30 years old; the optimal success period of boxing is between the ages of 21-25; and the maturity and top level period is between the ages of 26-28 (Sevim, Savaş 1993).
The average height of the participating boxers is determined as 174.40 cm. As we examined the similar researches in the literature related with the subject; we have seen that they have determined the average height of Turkish Boxing team as 177.46 cm; the average height of Ukraine Boxing team as 178.07 cm (Çınar et al., 2009); the average height of Azerbaijan Boxing team as 163.30 cm (Beyleroğlu, 1998); the average height of Georgia Boxing team as 180.11 cm (Çakmakçı, 2000). One of the effective criteria of sports performance is body weight (Sevim, Savaş 1993). The average body weight of the participating boxers is determined as 67.44 kg. As we examined the similar researches in the literature related with the subject; we have seen that they have determined the average body weight of Turkish Boxing team as 71.91 kg; the average body weight of Ukraine Boxing team as 72.72 kg (Çınar et al., 2009); the average body weight of Georgia Boxing team as 70.73 kg (Çakmakçı, 2000). We may state that the difference between these results arise from that heavyweight sportsmen are not very heavy and other sportsmen are staying in their weight categories.
The average Body-Mass Index of the participating boxers is determined as 22.11 kg/cm². As we examined the similar researches in the literature related with the subject; we have seen that they have determined the average Body-Mass Index of Turkish Boxing team as 22.83 kg/cm², the average body weight of Ukraine Boxing team as 21.66 kg/cm² (Çınar et al., 2009) in a research done on Turkish and Ukrainian Boxing National Teams; the average body weight of elite handball players as 21.68 kg/cm², the average body weight of elite basketball players as 20.10 kg/cm² in a research done on elite handball and basketball players (Savucu et al., 2006); the average body weight of tennis players as 22.30 kg/cm² in a research done on tennis players (Cohen et al., 1994). Similarly, as we compared the BMI measures of elite sportsmen, the results are parallel to our findings.

The oxidation of glucose increases by several times with physical exercise. In such cases, when the blood glucose level decreases, the glucagon hormones are secreted and by that, the blood glucose level is increased. As the physical exercise continues the glucose usage of the muscles may be increased 7-20 times regarding the intensity and period and blood glucose starts to be an important energy source. Blood glucose levels do not change much in low intensity exercises; on the other hand, it may increase by 15-20% in high intensity exercises (Fox et al., 1988). A statistically significant increment was observed between the Glucose levels of before the camp and after the camp of boxers. As we examine the researches in the literature; increments in glucose levels of elite female tae kwon-do performers before and after the physical exercise (Bezci, 2007); male football players in junior team after the aerobic and anaerobic physical exercises (Aydin et al., 2000); amateur football and basketball players before and after the physical exercise (Koçyiğit et al., 2011); professional male football players in mediocre and high intensity physical exercise (Güzel, Eler 2002); elite male beach handball players before and after the camp (İriadam et al., 2003); four weeks physical training group (Çınar et al., 2010) were observed. These results are supportive to our findings.
Decrement was observed on the insulin levels before and after the camp; but it was not considered as statistically significant. As we examine the researches in the literature, decrements in insulin levels of amateur football and basketball players before and after the physical exercise (Koçyiğit et al., 2011); and four weeks physical training group (Cınar et al., 2010) were observed. Even though there is no statistically significant difference, our findings of decrement in insulin levels are parallel to these researches. Since the glucose levels in blood change during physical exercise, the insulin secretion also changes (Kalyon, 1994). In a research, it was stated that slight decrement of blood, glucose concentration occurs in the first 10 minutes of physical exercise; yet, this decrement increases at the end of physical exercise longer than 10 minutes as the plasma insulin concentration continuously decrease (Pruett, 1970).

Changes were observed on the cortisol levels before and after the camp; but it was not statistically significant. As we examine the researches in the literature, increments in cortisol levels of basketball players before and after physical exercise (Kuter et al., 1995); and volleyball players during a long period volleyball match of 60-180 minutes and during short period high intensity match (Reilly et al., 1990) were observed. These results are supportive to our findings because of the changes in insulin levels.

No significant change was observed on the Urea levels of boxers before and after the camp. As we examine the researches in the literature, no significant difference was found between the Urea levels of amateur football and basketball players before and after the physical exercise (Koçyiğit et al., 2011); the research subjects before and after the physical exercise (Koç et al., 2007); the research subjects before and after the physical exercise (Çevik et al., 1996). These results are similar to our findings.

As a conclusion; it was determined that all of the blood levels of Boxing National Team sportsmen before and after the camp had important differences; yet only the Glucose parameter had a statistically significant difference. In this regard, it has important changes over one of the parameters we have examined, Glucose.

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References


