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THE EFFECTS OF SWIMMING EXECISE AT 35°C WATER AND L-CARNITINE ON BLOOD CELLS OF MICE

Çoksevim Bekir[1], Sarıtaş Nazmi[1], Pepe Osman[1], Akdoğan Hakan[1] Büyükipekçi Serdar[1],
[1]Erciyes University Physical Education and Athletics Collage, Kayseri / TURKEY
Email: coksevim@erciyes.edu.tr / 08.03.2010 / 19.03.2010

Abstract

Objective: We aimed to research the effects of swiming exercise that's water temparature35°C on blood cells of mice administred exhausted exercise.

Methods and procedures: It was used 48 male mice of the type of balb/C in this research. Mice in research were divided into four groups consist of non-training (n:12), swiming training (n:12), practical (n:12), and unpracticle (n:12) L-carnitine. L-carnitine as phamalogical agent was used the dose 100mgr/kg (0.4ml) to experiment groups. It was given saline solution at the same volume of L-carnitine to control group. The mice were swum until exhaustion in the morris water tank at 35°C ambiant .

Swimming exercise was applied during three weeks. Both control group and experiment group mice were measured blood parameters of their pre and post measurements. Blood samples (0.5ml) was taken twice from tail veins of the control and experiment mice during experiments.The blood cell parameter findings obtained by the blood cell counter device. All mice outenasied by eter inhalation long period after from experiment three weekly. All data for the exercise-trained groups were compared to the sedentary groups using ANOVA. The statistical significance among groups were excepted at $p < 0.05$.

Results: The data that's erythrocyte, hemoglobin, haematocrit and RDW, MPW, PDW were not founded significantly ($p>0.05$), when it was compared to the findings of control group with only swimming group. The values of leukocyte, erythrocyte, hemoglobin, RDW and trombocyte parameters were founded differences between two groups significantly ($p<0.05$) when it was compared to the findings of the control group with experiment group is swimming and taking l-carnitine. The values of MCV, PLT and PCT were found differences between two groups significantly ($p<0.05$) when the experiment group that's both swimming exercise and taking l-carnitine compared to with only swimming group.

Discussions and conclusions: The animals' performance exhaustion swimming exercise at 35°C water temperature obtained very low effects than 20°C water temperature on hematologic parameters of mice.It was conclude that data were found because of these factors did the swimming training and the temperature of water near to body heat, no effects of cold stress and the other factors

Key words: L-carnitine, Swimming training, Mouse Training**.**

Introduction

Swimming sports who are exposed to body temperature heat or sportive activity in hot environments may be in bad condition of heat stress. Exposure to diffrent heat can result in iportannt problems. Overheat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. Inadeqate heat levels can also decrease in the athletic performance. It is very important the effects of environmental factors on athletic performance. The athletic performance affects very bad to have inadequat body temperature in all different areas. Water temperature impacts to performance levels in the range of important (K. Tokizawa et al. 2010, R. Greger, U. Windhorst 1996, T.J. Doubt, 1991). The water temparature that changes to body tempererature 0,5°C is very effective on cardivascular performance levels and so the athletics peformance is being influenced negatively. There is many literatuture about the effects of different environmental temperature on functionel structure (D. Weinert, 2007, J. Bittel, 1992). It has to use more energy. L-Carnitine is very important to use for the mitokondrial energy production that increase during exercise at the brain, liver and kidney (L.A. Calò, 2008, S. Baptista 2008, V. Marken et al. 2003). Endurance sports affect on energy consumption and macrophage and these state obtains many advantage with both beta oxidation of fetty acits and immunity (J. Himms-Hagen, 1996, G.J. Icheng, 1990). Low temparature, humidity, body composition and other factors are negative effects on performance (T.J. Doubt, 1991, J.P. Wehrlin, 2006, P. Robach, 2005). The environmental and intrinsic factors stimulate to erythropoiesis. Swimming exercise affects also haemopoietic activity

during physical activity (L.A. Calò, 2008, W. Aoi, 2004, D. Weinert, 2006). We aimed with in this study that is to demonstrate many different effects of swimming at 35°C water temparature with using L-carnitine on mice blood parameters and swimming performances.

Materıal and method

This research was done in Erciyes University the center of experimental research center. It was used in our research 60 male mice of the type of balb/C and tuwelve mountly age in this research. The mice were devided into four groups consist of 1.group; control sedantery group(C1), 2.group; only swimming group(C2), 3.group;taking salin solution % 0.9 = 0.4ml(D1), 4.group; taking L-carnitin 100mgr(D2). All groups were formed with tuwelve mouse. The salin solution (%0.9Nacl) and L-carnitine (Santa Farma-l-cartine/1gr-3ml) were given at the same volume (0.4ml) by intrperitoneal (IP) injection. The mice were swum until exhaustion in the morris water tank at 35°C ambiant. The mice were swum Swimming exercise was applied during three weeks. Both the control groups and experiment groups at mice as pre-post measuring were tested blood parameters of their red blood cell (RBC), white blood cell (WBC), haemoglobine (Hb), haematocrite (HCT), mean corpuscular volume (MCV), mean corpuscular haemoglobine(MCH), mean corpuscular haemoglobine concentration (MCHC), platelet (PLT), platocrite (PCT) with the animals's swimming time(ST) and body temparature (BT). Blood samples was taken twice during experiments from all mice's tail veins and v.subclavia (0.5ml). .The blood cell parameter findings obtained by the blood cell counter device(CRP Counter, LC-178CRP). All mice outenasied by eter inhalation long period after from experiment three weekly. The statistically analysis of findings were evalueted as means ± SEM. Data for the control groups and experiment groups were compared by using one-way anova. Statistical significance of diffrences among groups were evaluated at $p < 0.05$

Results

While meaningful difference were found at the RBC parameter at all groups which performed swimming excercise according to sedantery group ($p<0.05$), meaningful difference were found between swimming+SF performed and swimming+ L-carnitine performed groups ($p<0.05$) While meaningful difference were found between sedantery group and with other groups increasing in favour of swimming participated group, meaningful differences were not found between groups which performed excercise ($p>0.05$). Hemoglobin and hematocrit levels of groups which performed swimming excercise, were meaningfully increased according to sedantery group ($p<0.05$) While meaningful differences were found at the MCV parameter between sedantery and all other groups($p<0.05$), Meaningful differences were not found between groups which performed swimming excercise($p>0.05$). Meaningful differences were found at the MCH and MCHC parameters in swimming performed groups according to sedantery group ($p<0.05$). While it was not found meaningful differences between swimming performed groups($p>0.05$), The differences which were occured in L carnitine performed group, were meaningful($p<0.05$) While meaningful differences were found at the PLT and PCT parameters in swimming performed groups according to sedantery group ($p<0.05$), Meaningful increases were found between swimming+ SF performed and swimming+ L carnitine performed groups($p<0.05$) In 35˚C swimming water, meaningful difference were found at the rectal temprature parameter of mice in favor of sedantery group ($p<0.05$), Meaningful differences were not found between groups which performed swimming excercise($p>0.05$).

The mice is performed swimming exercise in the 35°C water temparature under laboratory condition. The measurable findings are tested these parameters are red blood cell (RBC), white blood cell (WBC), hemoglobin (Hb), hematocrit (Hct), the erythrosite parameters that are mean corpuscular volume (MCV), mean corpuscular hemoglobine (MCH), mean corpuscular hemoglobine concentration (MCHC), platelet (PLT), Plateletcrit (PCT)

Table 1: The evaluation of some blood parameters in mice at swimming water heat 35°C.

Parameters	C_1 n:12	C_2 n.12	D_1 n:12	D_2 n:12
RBC	**9.4±0.3**	**8.4±0.4**	**9.3±0.4**	**9.5±0.5**
WBC	**5.5±0.3**	**6.7±3.0**	**7.1±2.1**	**7.8±1.0**
Hb	**15.6±0.4**	**12.7±0.5**	**14.0±0.5**	**12.8±1.0**
Hct	**46.3±2.0**	**37.5±1.6**	**43.2±2.6**	**41.6±3.21**

C1:Sedantery, C2: Only swimming D1: Taking Salin solution D2:Taking L-Carnitine

Table 2. The comparison of mice's eryhtrocyter parameters at 35°C

Parameters	C_1	C_2	D_1	D_2
MCV	**44.3±0.7**	**44.8±0.8**	**44.2±0.6**	**45.6±1.4**
MCH	**14.9±0.2**	**15.2±0.1**	**14.9±0.1**	**15.2±0.3**
MCHC	**32.9±0.2**	**33.4±0.6**	**33.8±0.7**	**33.4±0.9**
PLT	**470.1±225.1**	**623.1±243.0**	**802.0±102.7**	**729.6±181.3**
PCT	**0.23±0.1**	**0.35±0.0**	**0.45±0.0**	**0.39±0.0**

C1:Sedantery, C2: Only swimming D1: Taking Salin solution D2:Taking L-Carnitine

Table 3: The findings of the body temparature and the swimming time at water heat 35°C

Parameters	C1 n:12	C2 n:12	D1 n:12	D2 n:12
Body Temp(°C)	38.9±0.0	38.6±0.0	38.8±0.3	38.7±0.2
Swim. Time (min)	----------	76.3±2.6	82.5±2.1	91.4±5.3

Dicussion and conclusion

It has been increased in cardivascular response during swimming exercise because of increasing water temparature. The swimming exercise to be done in the body temperature levels affect vital function related exercise intensity. The increased of 1°C body temperature for reason of water temperature has increase heart rate as much as 10-15 pulse/min. The oxygen consumption and energy production have increase by reason of physical and emotional stress. In this research, the mice erytrosite levels increased in all groups the performed swimming exercise. The erythrocyte values rised for reason of erythropoiesis during swimming exercise three weekly. Erythrocyte quantity was found more levels In the mice of taking L-carnitine. Haemoglobin and haematocrite levels have also increase the cause of rised erythrocyte levels. There is also literature the sustaining this point of view.

In the groups of taking L-carnitine were obtained in the erythrocyte parameters inflation. We have thought that this increasings are collareted by physical activity or swimming exercise. There is papers in the related to literatures(L.A. Calò, 2008). The erythrocyter parameters that are MCV, MCH and MCHC levels have increase in the performed swimming exercise of all groups by swimming exercise and erhytropoiesis but, the increases in resultants eryhtrocytic parameters in the mice groups of taken L-carnitine is by reason of L-carnitine for affected intracellular metabolic activity. The phsical activity or swimming exercise affected in the increased important levels therefore, ıt has been thought that exercise is to come about the acceleration of coagulation mechanism (A. Kuroshima, 1992). The lengthening of mice's swimming time in the water temperature 35°C is by reason of related the metabolic rate level therefore, the exhaust of mice is to prolong because of increasing inntracellular energy production. Despite the swimming exercise time has been lengthened for energy production it has not been increased important body temperature. As a result; It has been determined the positive effects on endurance performances of swimming mice that the results are performed at the water heat near the body temperature in the swimming activity which has been got optimal responses because of oxygen consumption and energy production.

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THE RELATIONSHIP BETWEEN LOCUS OF CONTROL, SELF-ESTEEM AND GOAL ORIENTATION, MOTIVATIONAL CLIMATE IN BADMINTON PLAYERS

Eylem Gencer
School of Physical Education and Sports, Ahi Evran University, Kirsehir /TURKEY
Email: eylemg@gmail.com / 02.03.2010 / 19.03.2010

Abstract

Purpose. The purpose of this study is to research the relationship between locus of control, self-esteem and goal orientation, motivational climate in badminton players.

Methods. (Quantitative approach) The research was carried out in Badminton Turkey Clubs Championship where 12 clubs and 87 athletes participated in 2009. 56 badminton athletes (42 national, 14 non-national) that participated in Badminton Turkey Clubs Championship in 2009 whose mean age 18.78±3.46 constitute our research sample. Wingate Sport Achievement Responsibility Scale that was developed by G. Tannenbaum and G. Weingarten (1984), Rosenberg Self-Esteem Scale that was developed by M. Rosenberg (1965), The Task and Ego Orientation in Sport Questionnaire (TEOSQ- J.L. Duda & J.G. Nicholls, 1992) and The Perceived Motivation Climate Questionnaire (PMCSQ J.J. Seifriz, J.L. Duda, & L. Chi, 1992; M.D. Walling, J.L. Duda, & L. Chi, 1993) were used to gather tha data. The data were analyzed by using SPSS 17.0 programme and the techniques such as desriptive statistics and bivariate correlation.

Results. Results showed that there is positive and significant relationship between locus of control and mastery climate ($r=0.357$, $p<0.01$), there is negative and significant relationship between locus of control and performance climate ($r= -0.504$, $p<0.01$), there is no significant relationship between locus of control and ego, task orientation. There is positive and significant relationship between self-esteem and mastery climate ($r=0.398$, $p<0.01$), there is positive and significant relationship between self-esteem and ego orientation ($r=0.513$, $p<0.01$), there is no significant relationship between self-esteem and performance climate, task orientation.

Conclusion. According to these results it can be said that the higher a badminton athletes' mastery climate is, the more internal his/her locus of control becomes, the higher a badminton athletes' performance climate is, the more external his/her locus of control becomes, the higher a badminton athletes' ego orientation is, the higher his/her self-esteem becomes, the higher a badminton athletes' mastery climate is, the higher his/her self-esteem becomes.

Keywords: locus of control, self-esteem, goal orientation, motivational climate.

Introduction

Achievement goal theory provides a basic framework for examining the motivational processes in sport (C. Ames, 1984; J.G. Nicholls, 1984, 1989). This theory states that an individual's achievement goals and his/her perceived ability interact to influence achievement-related behaviors. Particularly, tiie individual's goal perspective will affect self-evaluations of established ability, effort, and attributions for success and failure, and these self-evaluations may affect state anxiety (J.L. Duda & J.G. Nicholls, 1992; J.G. Nicholls, 1984).

The Achievement Goal Theory is a theory that was developed by J.G. Nicholls (1984) in the context of educational achievement situations. A few years later the theory started to be used in the fi eld of Sport Psychology (J.L. Duda, 1987) as well. The theory explains achievement-motivated behaviours on the bases of task and ego orientation that are presumed to be stable personality predispositions. The Achievement Goal Theory purports that people who appraise success on the basis of self-improvement and mastery of the undertaken task(s) are exhibiting task orientation. For example, swimmers who focus on the improvement of their technical form and lap times are showing task orientation. In contrast, individuals who appraise success by comparing their own performance or results to those of others are showing ego orientation. For example, swimmers who primarily focus on winning and beating opponents regardless of time or technique are manifesting ego orientation (J.G. Nicholls, 1992).