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THE COMPAREMENT OF HAEMATOLOGICAL SYMPTOMS OF PHYSICAL EDUCATION AND SPORTS COLLAGE'S STUDENTS

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Abstract

In the study with the aiming to compare blood profile of the 20 males and 20 females students studying in different department of Physical Education and Sports College with the age range of 18-23 year-old voluntarily involved in the study. No any other exercise applied to subjects. However, with analyzing first year theorical and practical lessons at Physical Education and Sports College the effects of practice lessons on blood profile were searched.

The taken antecubital venous blood in 5 ml tubes contain EDTA from subjects analyzed in university center laboratory with using auto-analyzer. To define the differences between groups Mann-Whitney U test used.

By looking at results belong to male students, the comparison between department showed that leukocyte, granulocyte numbers and its percentage were high in coaching departments, lymphocyte and monocyte percentage were high in sports managements. Leukocyte numbers and granulocyte numbers were high in education and sport managements. Monocyte percentage value found statistically significant in sport management departments ($p<0,05$). In female students, average hemoglobin concentration, monocyte number and its percentage found high in coaching departments ($p<0,05$). As a result; although increasing and decreasing variables of blood profile levels according to the education departments of subjects, differences were within reference range values. It is thought that significant differences between departments can be because of the understanding and quality of the life, social-economic statue and personal differences. However, It is thought that reason of the differences do not depend on the applied curriculum.
Key Words: Blood Profile, Coaching Education, Physical Education and Sport Management

Introduction

Human body is a great asset with special talents when examining closely. This great asset needs movements continuously due to presence of the congenital talents. Developing technology in this century we are living now provides great convenience and comfort. But, as a result of the conveniences of developing technology human suffers from the disease of sedentary life and human physiological features are being affected by the sedentary life (N. Erkan, 1994).). However, regular exercises help to improve physical and physiological capacities distinctly (E.L. Fox, R.W. Bowers, M.L. Foss, 1999). Applied exercises for long makes positive contribution to human organism stressed in all studies have done so far. Positive effects of applied exercises on physical, physiological, psychological and motoric features have been reported8. One of the most important possitive effect of regular excirse can be on blood cells. Analyzed blood cells shows that doing regular exercise has different effects. The differences can be depend on exercise intensity, duration, frequency, and physical, physilogical and physical fitness of the subjects participated in the study. However, as noted above, both positive effects of regular exercise on all body cells and prevent health problems identified in the researches (H.W. Grıffıth, 2002, Ö. Şenel, 1995).

To be able to get possitive changes in blood cells, intensity, duration and frequency of the execises must be determined carefully (F. Turgay, S.O. Karamızrak, Ç. İşleğen, 2002). Because, in the results of the study in this area, there are different findings with the level of blood biochemistry as associated with the exercise. While Forger et al., indicates that blood biochemistry has positive improvement after acute exercise, Sucic et al., indicates that changes in blood biochemistry happen not with acute exercise only with long-term and regular exercises in their study (M.R. Şekeroğlu, R. Aslan, M. Tarakçıoğlu 1997).

This study done in order to analyze blood samples of first-year students follow different curricula and studying in Physical Education and Sports Coaching (AE), Education (BES), and Sports Management (SY) departments.

Methods

30 males and 30 females studying in different department at Physical Education and Sports College with the age range of 18-23 year-old voluntarily involved in the study. No any other exercise applied to subjects. However, first-class theoretical and practical curriculum analyzes done. As an analyzed result of fall semester of first academic year it is determined that subjects take practical lessons 20-14-8 hours in Education, Coaching and Sports Managements departments, respectively. This results shows that subjects take different hours of practical lessons. 5ml venous blood samples took from forearm antecubital region of participated subjects at the end of fall semester according to rule of hygiene in tubes contain EDTA and blood cells analyzed in university center laboratory with using auto-analyzer. To determine

differences between departemnets Mann-Whitney U test used.

Results

Table1. Leukocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Leukocyte values of male students studying A.E-S.Y departments						Leukocyte values of female students studying A.E-S.Y S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Leukocyte	A.E	10	6,2	1,1	-2,308	,021	A.E	10	7,3	1,6	-,178	,859
	S. Y	10	4,8	,9			S. Y	10	8,1	1,6		
Lymphocyte Numbers	A.E	10	1,9	,4	-,304	,761	A.E	10	2,0	,5	-,534	,593
	S. Y	10	1,9	,4			S. Y	10	2,2	,5		
Monocyte Numbers	A.E	10	,3	,0	-,163	,871	A.E	10	,5	,1	-1,971	,049
	S. Y	10	,3	,1			S. Y	10	,3	,1		
Granulocyte Numbers	A.E	10	3,9	1,0	-2,801	,005	A.E	10	4,7	1,4	-1,112	,266
	S. Y	10	2,6	,5			S. Y	10	5,4	1,3		
Lymphocyte (%)	A.E	10	31,1	5,2	-2,570	,010	A.E	10	31,9	12,9	-,800	,424
	S. Y	10	39,2	5,1			S. Y	10	28,2	7,4		
Monocyte (%)	A.E	10	5,5	1,7	-2,121	,034	A.E	10	6,9	2,3	-2,135	,033
	S. Y	10	7,6	1,8			S. Y	10	4,9	1,1		
Granulocyte Numbers Granulocyte (%)	A.E	10	63,2	6,7	-2,570	,010	A.E	10	63,6	8,3	-,711	,477
	S. Y	10	53,0	5,9			S. Y	10	66,7	7,2		

Table 2. Erythrocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Erythrocyte values of male students studying A.E-S.Y departments						Erythrocyte values of female students studying A.E-S.Y S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Erythrocyte	A.E	10	5,9	,3	-,907	,364	A.E	10	4,7	,3	-,178	,859
	S. Y	10	5,7	,5			S. Y	10	4,8	,4		
Hemoglobin(Hb)	A.E	10	16,4	1,1	-,833	,405	A.E	10	13,8	,7	-,667	,505
	S. Y	10	16,2	1,1			S. Y	10	13,5	1,2		
Hematocrit	A.E	10	53,2	4,9	-,756	,450	A.E	10	42,3	4,3	-,355	,722
	S. Y	10	51,0	4,2			S. Y	10	41,6	5,1		
Average Erythrocyte Numbers	A.E	10	90,2	7,5	-1,058	,290	A.E	10	87,3	3,4	-,267	,790
	S. Y	10	89,6	3,2			S. Y	10	85,8	7,1		
Average cell Hb	A.E	10	27,9	2,5	-,567	,570	A.E	10	29,2	1,6	-1,734	,083
	S. Y	10	28,4	1,7			S. Y	10	27,9	1,7		
Concentration of Average Cell Hb	A.E	10	31,0	1,7	-1,022	,307	A.E	10	33,5	1,5	-,847	,397
	S. Y	10	31,7	1,5			S. Y	10	32,7	2,9		
Distribution of erythrocyte Width	A.E	10	13,24	,5	,000	1,000	A.E	10	13,9	,7	-,756	,449
	S. Y	10	13,3	,3			S. Y	10	14,2	,5		

Table 3. Platelet values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Platelet values of male students studying A.E-S.Y departments						Platelet values of female students studying A.E-S.Y departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p
Platelets	A.E	10	185,2	23,0	-,759	,448	A.E	10	218,0	22,7	-,578	,563
	S. Y	10	182,6	30,3			S. Y	10	226,6	39,8		
Average Platelet Volume	A.E	10	8,6	,9	-,265	,791	A.E	10	9,4	1,0	-1,426	,154
	S. Y	10	8,7	,4			S. Y	10	8,8	,7		

Table 4. Leukocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	Leukocyte values of male students studying A.E-B.E.S departments						Leukocyte values of female students studying A.E-B.E.S departments					
	Section	n	X	Sd	z	P	Section	X	n	Sd	z	p

Leukocyte	A. E	10	6,2	1,1	-1,430	,153	A. E	10	7,3	1,6	-,668	,504
	B.E.S	10	7,2	1,3			B.E.S	10	6,7	2,2		
Lymphocyte Numbers	A. E	10	1,9	,4	-1,872	,061	A. E	10	2,0	,5	-,357	,721
	B.E.S	10	2,3	,6			B.E.S	10	2,0	,3		
Monocyte Numbers	A. E	10	,3	,0	-1,635	,102	A. E	10	,5	,1	-3,094	,002
	B.E.S	10	,4	,1			B.E.S	10	,3	,0		
Granulocyte Numbersı	A. E	10	3,9	1,0	-,623	,534	A. E	10	4,7	1,4	-,400	,689
	B.E.S	10	4,3	1,2			B.E.S	10	4,4	2,0		
Lymphocyte (%)	A. E	10	31,1	5,2	-,178	,859	A. E	10	31,9	12,9	-,355	,722
	B.E.S	10	33,4	8,1			B.E.S	10	31,7	8,2		
Monocyte(%)	A. E	10	5,5	1,7	-,578	,563	A. E	10	6,9	2,3	-1,201	,230
	B.E.S	10	6,1	1,9			B.E.S	10	5,6	2,1		
Granulocyte(%)	A. E	10	63,2	6,7	-,222	,824	A. E	10	63,6	8,3	-,178	,859
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		

Table 5. Erythrocyte values of male and females students studying in A.E-S.Y and B.E.S Departments

Parametreler	**Erythrocyte values of male students studying A.E-B.E.S departments**						**Erythrocyte values of female students studying A.E-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Erythrocyte	A. E	10	5,9	,3	-1,023	,306	A. E	10	4,7	,3	-,668	,504
	B.E.S	10	5,6	,6			B.E.S	10	4,6	,3		
Hemoglobin	A. E	10	16,4	1,1	-,224	,823	A. E	10	13,8	,7	-,979	,328
	B.E.S	10	16,2	1,2			B.E.S	10	13,3	1,2		
Hematocrit	A. E	10	53,2	4,9	-1,022	,307	A. E	10	42,3	4,3	-,089	,929
	B.E.S	10	50,2	5,2			B.E.S	10	42,0	4,2		
Average Erythrocyte number	A. E	10	90,2	7,5	-,933	,351	A. E	10	87,3	3,4	-,978	,328
	B.E.S	10	89,7	4,0			B.E.S	10	89,7	5,8		
Average cell Hb	A. E	10	27,9	2,5	-,978	,328	A. E	10	29,2	1,6	-,800	,424
	B.E.S	10	29,1	2,1			B.E.S	10	28,4	2,4		
Concentration of average cell Hb	A. E	10	31,0	1,7	-1,870	,062	A. E	10	33,5	1,5	-2,721	,007
	B.E.S	10	32,4	1,7			B.E.S	10	31,7	1,6		
Distribution of erythrocyte Width	A. E	10	13,2	,5	-1,204	,228	A. E	10	13,9	,7	-,311	,755
	B.E.S	10	13,6	,4			B.E.S	10	14,3	1,3		

Table 6. Platelet values of male and females students studying in A.E-S.Y and B.E.S Departments

Parameters	**Platelet values of male students studying A.E-B.E.S departments**						**Platelet values of female students studying A.E-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Platelet	A. E	10	185,2	23,0	-1,157	,247	A. E	10	218,0	22,7	-,986	,324
	B.E.S	10	203,6	29,9			B.E.S	10	206,7	25,9		
Average Platelet Volume	A. E	10	8,6	,9	-,401	,689	A. E	10	9,4	1,0	-,401	,688
	B.E.S	10	8,5	,5			B.E.S	10	9,1	,4		

Table 7. Leukocyte values of male and females students studying in S.Y - B.E.S Departments

Parameters	**Leukocyte values of male students studying S.Y -B.E.S departments**						**Leukocyte values of female students studying S.Y -B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Leukocyte	S Y	10	4,8	,9	-3,293	,001	S Y	10	8,1	1,6	-1,631	,103
	B.E.S	10	7,2	1,3			B.E.S	10	6,7	2,2		
Lymphocyte Numbers	S Y	10	1,9	,4	-1,651	,099	S Y	10	2,2	,5	-1,106	,269
	B.E.S	10	2,3	,6			B.E.S	10	2,0	,3		
Monocyte Numbers	S Y	10	,3	,1	-1,553	,121	S Y	10	,3	,1	-1,641	,101
	B.E.S	10	,4	,1			B.E.S	10	,3	,0		
Granulocyte Numbers	S Y	10	2,6	,5	-2,981	,003	S Y	10	5,4	1,3	-1,261	,207
	B.E.S	10	4,3	1,2			B.E.S	10	4,4	2,0		

Lymphocyte (%)	S Y	10	39,2	5,1	-1,777	,076	S Y	10	28,2	7,4	-,945	,345
	B.E.S	10	33,4	8,1			B.E.S	10	31,7	8,2		
Monocyte (%)	S Y	10	7,6	1,8	-2,677	,007	S Y	10	4,9	1,1	-,525	,599
	B.E.S	10	6,1	1,9			B.E.S	10	5,6	2,1		
Granulocyte (%)	S Y	10	53,0	5,9	-1,866	,062	S Y	10	66,7	7,2	-,735	,462
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		

Table 8. Erythrocyte values of male and females students studying in S.Y- B.E.S Departments

Parameters	**Erythrocyte values of male students studying S.Y-B.E.S departments**						**Erythrocyte values of female students studying S.Y-B.E.S departments**					
	Section	**N**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
	B.E.S	10	60,4	9,5			B.E.S	10	62,6	10,0		
Erythrocyte	S Y	10	5,7	,5	-,311	,756	S Y	10	4,8	,4	-,423	,672
	B.E.S	10	5,6	,6			B.E.S	10	4,6	,3		
Hemoglobin	S Y	10	16,2	1,1	-,535	,593	S Y	10	13,5	1,2	-,369	,712
	B.E.S	10	16,2	1,2			B.E.S	10	13,3	1,2		
Hematocrit	S Y	10	51,0	4,2	-,222	,824	S Y	10	41,6	5,1	-,053	,958
	B.E.S	10	50,2	5,2			B.E.S	10	42,0	4,2		
Average Erythrocyte Numbers	S Y	10	89,6	3,2	-,445	,657	S Y	10	85,8	7,1	-1,157	,247
	B.E.S	10	89,7	4,0			B.E.S	10	89,7	5,8		
Average cell Hb	S Y	10	28,4	1,7	-,400	,689	S Y	10	27,9	1,7	-,105	,916
	B.E.S	10	29,1	2,1			B.E.S	10	28,4	2,4		
Concentration of average cell Hb	S Y	10	31,7	1,5	-1,203	,229	S Y	10	32,7	2,9	-,999	,318
	B.E.S	10	32,4	1,7			B.E.S	10	31,7	1,6		
Distribution of erythrocyte Width	S Y	10	13,3	,3	-1,614	,107	S Y	10	14,2	,5	-,211	,833
	B.E.S	10	13,6	,4			B.E.S	10	14,3	1,3		

Table 9. Platelet values of male and females students studying in S.Y- B.E.S Departments

Parameters	**Platelet values of male students studying S.Y-B.E.S departments**						**Platelet values of female students studying S.Y-B.E.S departments**					
	Section	**n**	**X**	**Sd**	**z**	**P**	**Section**	**X**	**n**	**Sd**	**z**	**p**
Platelet	S Y	10	182,6	30,3	-1,422	,155	S Y	10	226,6	39,8	-1,003	,316
	B.E.S	10	203,6	29,9			B.E.S	10	206,7	25,9		
Average Platelet Volume	S Y	10	8,7	,4	-,847	,397	S Y	10	8,8	,7	-,738	,461
	B.E.S	10	8,5	,5			B.E.S	10	9,1	,4		

By looking at the tables belong to male students, the comparison between department showed that leukocyte, granulocyte numbers and its percentage were high in coaching departments, lymphocyte and monocyte percentage were high in sports managements. Leukocyte numbers and granulocyte numbers were high in education and sport managements. Monocyte percentage value found statistically significant in sport management departments ($p<0, 05$). In female students, average hemoglobin concentration, monocyte number and its percentage found high in coaching departments ($p<0,05$).

Discussion

In the study with the aiming to compare blood profile of the students studying in different departments such as Physical Education and Sports Coaching (AE), Physical Education and Sports Education (BES), and Sports Management (SY), differences in level of blood cells estimated. At the end of the study, no differences were found in value of blood cells including erythrocyte (4.00-5.55), hematocrit (36-48), average erythrocyte volume(80-100), distributionof erythrocyte width (12-15), hemoglobin (12–16.5), average cell hemoglobin (26-34), concentration of average cell hemoglobin (32 -36), platelet (180–350), average platelet volume (7.6–10.8), leukocyte (3.8–9.8), lymphocyte numbers (04-08), lymphocyte percentage (20-48), monocyte number (0.1–1.0), monocyte percentage (2-10), granulocyte numbers (1.4–7.0) and granulocyte percentage (42-80) when compare with their own reference range values. However, when we look at the result of the measurements as individually, it was found that some values were out of the reference range values. Obtained results at the end of the study compatible with previous studying done in the same area. When we compare our results with previous works It indicated that leukocyte values (WBC) were similar with the results of (M. Ercan, F. Bayıroğlu, R. Kale, 1996; R. Varol, Y. Taşkıran, 1995 and O. Özcan, B. Çoksevim, F. Koca, 1993) and values of lymphocyte number (LYM), lymphocyte percentage (LYM %), monocyte (MONO), monocyte percentage (MONO%), granulocyte number (GRA) and granulocyte percentage

(GRA %) were similar with the results of (R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997).

Obtained results from values of the erythrocyte (RBC), hematocrit (HCT), average erythrocyte volume (MCV), hemoglobin (HGB), average cell hemoglobin (MCH) and concentration of average cell hemoglobin (MCHC) were similar with the works of (M. Ercan, F. Bayıroğlu, R. Kale, 1996; O. Özcan, B. Çoksevim, F. Koca, 1993; C. Arslan, B. Gönül, B. Kaplan, 1992, R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997; F. Özyener, H. Gür, K. Özlük, 1994; İ. Şemin, M. Kayatekin, G. Oktay, 1993; S. Dinçer, C. Arslan, B. Kaplan, 1993). The reason of the increased erythrocyte values can be because of the effect of hypoxic hypoxia and training supported with the previous works placed in literature.

Values belong to platelet (PLT) and average platelet volume (MPV) were parallel with the works of (M. Ercan, F. Bayıroğlu, R. Kale, 1996, F. Özyener, H. Gür, K. Özlük, 1994; R. Moğulkoç, A.K. Baltacı, B. Üstündağ, 1997 and S. Akar, H. Beydağı, S. Temoçin, 1992). When blood biochemistry analyzed at the end of acute maximal exercise obtained different hematological parameters depended on the exercise with different durations and intensities showed in similar works (A.K. Baltacı, R. Moğulkoç, B. Üstündağ, 1998). As a result of the study, although having increasing and decreasing results from all volunteer subjects trained in different department, most of the those differences within the reference range values. It is thought that significant differences between departments can be because of the understanding and quality of the life, social-economic statue and personal differences. However, It is thought that reason of the differences not depend on the applied curriculum.

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