LEVEL OF MOTION EFFICIENCY OF STUDENTS AT FCHPT STU IN BRATISLAVA

ROBIN PĚLUCHA - MARTIN KRIŽAN - MIROSLAV BOBRÍK
Department of Physical Education and Sport
Faculty of Chemical and Food Technology
Slovak University of Technology in Bratislava
Slovak Republic

ABSTRACT

The aim of work was to find out and consequently compare the level of motion efficiency and level of somatic development of the 1.st academic year students (2012/2013) Faculty of chemical and food technology STU in Bratislava (122 men and 382 women). Acquired results of explored collection we compared with the results of the 1.st academic year students in 2011/2012 at FCHPT STU in Bratislava. We observed statistic distinctions also in the collection itself. We divided all testing group in particular sections according some predetermined criteria. These criteria were regions they come from, type of graduated secondary school and the fact if the student is or is not a sportsman. To discover motion efficiency we used standardized motion test batteries. To discover somatic level development we used BMI index. From the results of testing motion efficiency is clear, there are not any significant distinctions in dividing the group according regions and secondary schools in the men category. In the women category we found out some significant distinctions only by dividing the group according regions. Lady students from Bratislava and the Central Slovak region dominated in upper limb strength. In the case of dividing the group according “sportsman” or “non-sportsman” we found out significant distinctions in both men and women categories prosperous for sportsmen. At the level of somatic development we did not observe any significant distinctions in any group dividing. At the results comparison of motion testing efficiency and somatic level development of students of the 1.st academic year 2011/12 and 2012/13 we found out significant distinctions in sit-ups (both men and women) prosperous for year 2012/1013. On the other side we found out significant distinctions non prosperous for the year 2012/2013 in beep test of women. In the level of somatic development of both men and women we found out significant distinctions in BMI value index. The number of lady students with underweight came down but on the other side the number of lady students with overweight came up. At the male students there was a significant increase of students with underweight and decline of students with overweight.

Keywords: motion efficiency, criteria, testing, comparison of results

INTRODUCTION

The students of Slovak universities come from different social, cultural and economic environment which in some ways determine the level of their motion efficiency and somatic development.

These days we cannot determine a level of student’s and motion efficiency at the country level, or researches in the issue were done only at the faculty levels with the testing databases (Mižičko, 2000; Korček, 2003, 2004; Havranová, 2003; Šulc a kol., 2004; Adamčák a kol., 2004; Bobrík a kol., 2000, 2005, 2012). Actuality of the issue is underlined by the fact that the last country testing of university students was implemented in 1986 under the supervision of Mr. Kolář (Kolář, 1988). We haven´t found the studies that would analyze different level of motion efficiency and somatic development in the cases of students from rural/urban environment, grammar schools/high schools or athletes/non-athletes. The objective of this paper is to find out and level of motion efficiency and somatic development of students from FCHPT with databank of 504 members (122 male and 382 female).

METHODS

The sample is made of the students from FCHPT STU in 2011/2012 with 524 members (142 males and 382 females) and students from FCHPT STU in 2012/2013 with 504 members (122 males and 388 females) that were able to go through the motion efficiency tests. The testing was taking place in sporting areal of Pavol Glesk at Mladá Garda in Bratislava. The testing was implemented in the first semester of 2011/2012, 2012/2013 respectively. The testing battery was determined by the historical experiences and also the ability to compare the data.

The testing battery was made of:

- 50m run – start in high position
- sit-up in 60 sec
- long jump from standing position
- Beep test
- both hand throw with 2 kg ball

Criteria of probands:

- Region Bratislava, Western Slovakia, Central Slovakia, Eastern Slovakia
- high school – grammar school, vocational school
- sportsman/non-sportsman

Comparison of the motion efficiency testing results we used the test of statistical significance of differences in mean values of the significance level p-value<0.05, in program Statgraphic (One – Way ANOVA, One – Variable Analysis, Two – Sample Comparisum).

RESULTS

By valuation of results BMI probands FCHPT 2012, we found out that 32 male probands from total number of male probands 122 were in category overweight (32.26%) and 3,60% (3 persons) were in category obesity. By female, from total number of probands 388 were in category overweight only 11.23% - 46 female probands. We found out, that in category obesity was only 2.08% female propends.

Testing motion efficiency – Male

In according to predetermined criteria (dividing probands by region, high school, sportsman/non-sportsman) we found out that statistic distinctions were on level p<0.05 only by criteria sportsman/non-sportsman (Tab. 1)

Table 1 Comparison of motion efficiency male by criteria sportsman/non-sportsman

Testing battery	50m run		2 kg ball throw		Sit-ups		Beep test		Long jump	
Statistical characteristics	S	N	S	N	S	N	S	N	S	N
n	50	72	50	72	50	72	50	72	50	72
x	7.46**	7.55	9.56	9.57	49.20	50.12	52.23	54.20	222.80	217.30
Standard deviation	1.45	0.86	1.66	1.88	8.85	23.10	21.55	19.23	23.56	24.42
min	5.86	5.96	5.36	3.25	27.00	20.00	20.00	17.00	168.00	140.00
max	10.11	10.20	13.60	13.90	68.00	59.00	104.00	103.00	285.00	270.00
** p<0.05										

Partial surprise was a statistically significant difference in favor for non-sportsman, respectively recreational sportsman in Beep test. The achieved results show a high percentual representation of power-speed sports (fitness, hockey, judo, karate, powerlifting, table tennis etc.), which are sportsmen at FCHPT attending regularly. This corresponds to lower levels of endurance ability and their use in a sport.

Comparison results of motion efficiency male in years 2011 and 2012

Comparing the results of testing motion efficiency of students FCHFT STU 2011 and 2012 in three tests we had observed statistically significant differences of measured mean values only in test sit-ups in favor for male tested in 2011 (Tab. 2).

Table 2 Comparison results of motion efficiency male in years 2011 and 2012

Testing battery	Sit-ups		Beep test		Long Jump	
Statistical characteristics	2011	2012	2011	2012	2011	2012
n	143	122	143	122	143	122
x	7.46**	7.55	9.56	9.57	49.20	50.12
Standard deviation	1.45	0.86	1.66	1.88	8.85	23.10
min	5.86	5.96	5.36	3.25	27.00	20.00
max	10.11	10.20	13.60	13.90	68.00	59.00
** p<0.05						

Testing Motion Efficiency – Female

In contrast with male, by whom we found out only partial statistical differences, by female we assess that statistically significant differences mean values are in two predetermined criteria, according to the criteria specified in advance (divided by region, attended high school and sportsman/non-sportsman). Evaluation the results achieved by the criteria sportsman/non-sportsman, female students - sportsman achieve statistically better results in all tests of motion efficiency (Tab. 3).

Table 3 Comparison of motion efficiency female by criteria sportsman/non-sportsman

Testing battery	50m run		2kg ball throw		Sit-ups		Beep test		Long jump	
Statistical characteristics	S	N	S	N	S	N	S	N	S	N
n	165	116	165	116	165	116	165	116	165	116
x	9.14**	9.47	6.05**	5.58	40.41**	38.08	27.91**	23.99	166.86**	160.18
Standard deviation	1.03	1.56	0.98	1.04	8.34	8.58	11.03	9.00	21.11	22.12
min	7.06	7.10	3.80	3.10	17.00	18.00	10.00	10.00	110.00	110.00
max	12.20	19.00	9.50	11.30	65.00	66.00	64.00	67.00	220.00	210.00
** p<0.05										

Statistical significant differences in tests of motion efficiency were assessed dividing female by regions (Tab. 4).

Female students FCHPT from central Slovakia and eastern Slovakia achieved statistically significant differences in comparison with female students from western Slovakia on level p-value<0.05. Other differences we found out in test 2kg ball throw, here statistically significant differences were between all observed regions. The highest mean values achieved female students from eastern Slovakia region. In the other hand the lowest mean values achieved female students from Bratislava region. The last test from our testing battery with noticed significant differences was Beep test. In this test we observed significant differences between female students from Bratislava region and central Slovakia region. Significantly higher values achieved central Slovakia region.

Table 4 Comparison of motion efficiency female by criteria region

50m run	**B**	**C**	**E**	**W**
n	36	103	66	75
x	9.56	9.12**	9.07 **	9.53**
Standard deviation	1.51	1.02	1.00	1.64
min	8.06	7.70	7.06	7.10
max	15.00	12.77	12.00	19.00
** p<0.05		**C-W**	**E-W**	
2kg ball throw	**B**	**C**	**E**	**W**
n	36	103	66	75
x	6.13 **	6.07**	5.68 **	5.59**
Standard deviation	1.23	1.04	0.88	0.97
min	4.40	3.10	3.70	3.80
max	11.30	9.50	8.00	9.20
** p<0.05	**B-E**	**C-W**	**E-C**	**W-C**
Sit-ups	**B**	**C**	**E**	**W**
n	36	103	66	75
x	40.88	39.29	39.37	38.77
Standard deviation	9.69	8.28	8.75	9.07
Min	17.00	18.00	18.00	3.00
max	65.00	66.00	62.00	65.00
Beep test	**B**	**C**	**E**	**W**
n	36	103	66	75
x	22.83**	28.27**	26.24	25.37
Standard deviation	7.12	12.14	9.80	9.20
min	12.00	10.00	15.00	10.00
max	40.00	67.00	52.00	51.00
** p<0.05	**B-C**	**C-B**		
Long jump	**B**	**C**	**E**	**W**
n	36	103	66	75
x	165.25	166.01	162.95	162.21
Standard deviation	19.82	21.51	21.66	23.29
min	120.00	119.00	110.00	110.00
max	200.00	220.00	220.00	205.00

Comparison results of motion efficiency female in years 2011 and 2012

By comparison result of motion efficiency female students FCHPT 2011 and 2012 in three tests we observed statistically significant differences measured mean values in two tests (Tab. 5).

In sit-ups test was statistically significant difference in favour for female students tested in year 2012. Vice-versa we found out that in Beep test female students achieved higher values of statistically significant level in year 2011.

Table 5 Comparison results of motion efficiency female in years 2011 and 2012

Testing battery	**Sit-ups**		**Beep test**		**Long jump**	
Statistical characteristics	**2011**	**2012**	**2011**	**2012**	**2011**	**2012**
n	382	389	382	389	382	389
x	37.46	39.54**	32.43**	26.56	166.4	163.7
Standard deviation	9.27	8.8	11.83	11.31	22.06	22.93
min	12	17	11	9	100	62
max	66	71	80	80	275	232
** p<0.05						

CONCLUSION

From obtained results of testing motion efficiency students of FCHPT in school year 2012/2013 and comparison results with tested students from previous school year follows that our hypotheses were confirmed only partially.

H1, in which we supposed that male and female sportsman achieve statistically significantly better results in tests of motion efficiency than non-sportsman, was confirmed partially. While by female we notice differences in all tests, by male only in two tests (50 m run and long jump). Surprisingly in Beep test we observed significant differences in favour for non-sportsmen.

In H2 we supposed that students from Bratislava region will have lower level of motion efficiency than students from the others Slovak regions. This hypothesis was confirmed only by female in Beep test and 2 kg ball throw.

In H3 we supposed that students who studied on high vocational school will have higher level of motion efficiency than students from grammar school. This hypothesis was not confirmed.

In comparison results of motion efficiency in years 2011 and 2012 we did not notice significant differences.

REFERENCES

ADAMČÁK, Š., BARTÍK, P., ROZIM, R. 2004. *Telesný rozvoj a pohybová výkonnosť študentiek Pedagogickej fakulty Univerzity Mateja Bela*. Telesná výchova a šport 14, 2004, 1, s. 18-20. ISSN 1335-2245.

BOBRÍK, M. a kol. 2012. Úroveň telesnej zdatnostia motorickej výkonnostištudentov FCHPT STU v Bratislave. In *Telesná a výchova a sport, 2012,* č.2.

BOBRÍK, M. a kol. 2005. Analýza vzťahov medzi ukazovatelmi funkčnej zdatnosti poslucháčov FCHPT STU v Bratislave. In *Telesná výchova a sport, 2005,* č.2.

BOBRÍK, M. a kol. 2000. Stav telesného a pohybového rozvoja poslucháčov CHTF STU v Bratislave. In *Telesná výchova a sport, 2000,* č.3.

HAVRANOVÁ, M. 2003. *Telesný rozvoj a pohybová výkonnosť študentiek Právnickej fakulty UK v Bratislave*. In Telesná výchovy, šport, výskum na univerzitách. Zborník referátov z medzinárodnej vedeckej konferencie, Bratislava 2003, s. 75-78. ISBN 80-227-1972-2.

KORČEK, V. 2003. *Telesný a funkčný profil edukantov Strojníckej fakulty STU v akademickom roku 2000/2001 – 2002/2003*. In Telesná výchovy, šport, výskum na univerzitách. Zborník referátov z medzinárodnej vedeckej konferencie, Bratislava 2003, s. 96 - 100. ISBN 80-227-1972-2.

KORČEK, V. 2004. *Telesný rozvoj a pohybová výkonnosť edukantov univerzít Slovenskej republiky*. In Optimalizácia zaťaženia v telesnej a športovej výchove. STU Bratislava 2004, s. 98 – 103. ISBN 80-227-2042-9.

MIŽIČKO, M. 2000. *Pohybová výkonnosť študentov nastupujúcich na Filozofickú fakultu UK Bratislava v školskom roku 1997-1998*. In Vývojové tendencie v telesnej výchove a športe na vysokých školách. Zborník z vedeckej konferencie k 20. výročiu vzniku Matematicko-fyzikálnej fakulty UK v Bratislave. Bratislava 2000, s. 53-60. ISBN 80-223-1554-0.

ŠULC, I., RÁCZ, O., SERGIENKO, V., STAŠKO, I., TELEPKA, M. 2004. *Porovnanie telesného rozvoja a pohybovej výkonnosti študentov vysokých škôl v stredoeurópskom regióne systémom Eurofit*. TVŠ 14, 2004, 1, s. 15-18. ISSN 1335-2245.

KOLÁŘ, V. 1988. *Pohybová výkonnosť a telesný rozvoj študentov nastupujúcich na vysokú školu a jej zmeny po dvadsať ročnom intervale*, Teorie a praxe tel.výchovy, roč. 36, 1988, č.3.