

DIFFERENCES BETWEEN BOYS AND GIRLS AGED 7 IN MORFOLOGIC AND MOTOR DIMENSIONS

Dobromir Bonacin PhD ¹, Danijela Bonacin ¹, Bilić Žarko PhD ²

¹ Faculty of sports and physical education, University of Sarajevo

² Faculty PMO – Physical culture, University of Mostar

Summary

Upon entering the primary school, the children aged 7 years underwent an experimental specially programmed transformational procedure which lasted eighteen months. The transformational procedure was monitored by means of 26 control variables from the morphological and motor subspace, and was measured every 9 months. The objective of the procedure was to monitor the growth and the development in both sexes (249 male and 238 female pupils). Results shown stable differences that remain through treated period. This information witnesses about obligation of different programs composing for primary school classes with kids 7-10 years of age.

Key words: *differences, boys, girls*

Introduction

From the very birth and on to maturity a child goes through several different developmental phases in which particular characteristics, abilities and properties are manifested in different ways. However, in a sport sense it is evident that some abilities simply have the role of a foundation stone on which a well-balanced development of the whole organism is based. One, often mentioned idea, generates different attitudes in scientific circles – different school programs for boys and girls 7-10 years old. Simplest, and the most correct way of suggesting anything is to administer controlled transformation process, to monitor differences and to generate real results with objective conclusions.

Methods

The sample was comprised of 249 male and 238 female children, primary school first formers from Split, who, at the beginning of the experimental procedure, were 7 years $\pm$ 2 months old. All the children had no visible aberrations, and they were all able to participate in a normal program of work in primary school.

The sample of variables necessary for the assessment was selected in such a way as to cover both the morphological and the motor status: body height (AVIT), arm length (ADUR), leg length (ADUN), biacromial width (ASIR), knee diameter (ADIK), wrist diameter (ADRZ), body weight (ATEZ), chest circumference (AOGK), lower leg circumference (AOPK), forearm circumference (AOPL), skin fold of the back (AKNL), upper arm skin fold (AKNN) and abdominal skin fold (AKNT). All the measures were taken according to the international biological program. The following variables were used for the assessment of the motor status: side steps (MKUS), held part in the hang (MVIS), long jump from a standstill (MSDM), standing on the bench (MP20), polygon backwards (MPOL), straddle forward bend (MPRR), sit-ups (MDTS), 20m run from a standing start (M20V), hand-tapping (MTAP), foot-tapping (MTAN) and throwing the ball for distance (MBLD), 3-min run (FT3M) was used to assess the aerobic work. All the measurements were done by qualified people who had significant experience in collecting the aforementioned initial data.

Data processing methods include univariate (Anova) and multivariate (discriminant) analyses between male and female subjects.

Results and discussion

Results in Table 1 shows that all three discriminant functions are significant and practically on absolutely same level of significance. Local differences accentuate transversal dimensions, local voluminosity and skin fold among morphological characteristics (knee diameter – ADIK, wrist diameter – ADRZ, chest circumference – AOGK and upper arm skin fold – AKNN. Motor dimensions show differences in polygon backwards – MPOL, long jump from a standstill – MSDM, throwing the ball for distance – MBLD, straddle forward bend – MPRR and 20m run from a standing start – M20V, presenting coordination, explosiveness and flexibility. As we can see, boys present better results in all mentioned variables (including fat tissue) except flexibility.

Variable	1. Measurement			2. Measurement			3. Measurement		
	F	p	S	F	p	S	F	p	S
AVIT	10.20	0.00	0.20	7.58	0.01	0.17	5.51	0.02	0.15
ADUN	1.09	0.30	0.07	0.32	0.58	0.03	0.21	0.66	0.03
ADUR	12.30	0.00	0.22	15.84	0.00	0.24	17.52	0.00	0.26
ADRZ	52.17	0.00	0.44	50.52	0.00	0.41	49.24	0.00	0.42
ADIK	61.75	0.00	0.47	65.27	0.00	0.46	63.26	0.00	0.47
ASIR	6.96	0.01	0.17	6.73	0.01	0.16	5.34	0.02	0.14
ASIK	8.60	0.00	0.18	18.53	0.00	0.26	18.23	0.00	0.26
ATEZ	8.94	0.00	0.19	7.28	0.01	0.16	6.00	0.01	0.15
AOPL	4.97	0.02	0.14	2.03	0.15	0.09	0.79	0.62	0.06
AOPK	4.13	0.04	-0.13	1.96	0.16	-0.08	2.42	0.12	-0.10
AOGK	16.37	0.00	0.25	13.90	0.00	0.22	11.87	0.00	0.21
AKNN	17.63	0.00	-0.26	18.56	0.00	-0.26	15.03	0.00	-0.24
AKNL	11.35	0.00	-0.21	12.35	0.00	-0.21	10.73	0.00	-0.20
AKNT	3.68	0.05	-0.12	8.00	0.01	-0.17	7.53	0.01	-0.17
MKUS	5.57	0.02	-0.15	12.03	0.00	-0.21	9.93	0.00	-0.19
MPOL	29.92	0.00	-0.34	44.46	0.00	-0.39	31.70	0.00	-0.34
MP2O	1.62	0.20	0.08	3.11	0.07	0.11	1.71	0.19	0.08
MPPR	30.78	0.00	-0.34	39.17	0.00	-0.37	37.38	0.00	-0.37
MTAP	4.07	0.04	0.13	0.17	0.69	-0.02	0.41	0.53	-0.04
MTAN	3.06	0.08	-0.11	11.10	0.00	-0.20	10.97	0.00	-0.20
MSDM	29.97	0.00	0.34	34.58	0.00	0.34	32.56	0.00	0.34
MBLD	207.2	0.00	0.77	226.0	0.00	0.75	202.1	0.00	0.74
M20V	18.59	0.00	-0.27	22.49	0.00	-0.28	18.16	0.00	-0.26
MDTS	3.49	0.06	0.12	6.35	0.01	0.15	7.24	0.01	0.17
MVIS	2.03	0.15	0.09	4.61	0.03	0.13	5.20	0.02	0.14
FT3M	11.69	0.00	0.22	22.28	0.00	0.28	20.59	0.00	0.28
R			0.71			0.75			0.73
R2			0.51			0.56			0.53
Λ			.49			.44			.47
H			336.25			387.05			357.35
DF			26			26			26
P			0.0000			0.0000			0.0000
C1 male			0.313			0.304			0.306
C2 female			-0.313			-0.304			-0.306

Table 1. Results of univariate Anova analysis (F, p) and multivariate discriminant analysis (R=correlation, R2=determination, Λ=lambda, H=hi-square, DF=deg.of freedom, P=probability, C1, 2 = centroids, S=structure of discriminant function)

It is not unexpected that boys are more explosive then girls, with higher results in transversal dimensions and voluminosity because of their natural and genetic position. In the same sense we can accept flexibility because of lower muscle tension in girls, as well as body composition explains fat tissue in girls.

No meter of transformation processes, described differences remain and we can conclude that outside interventions (training, education) can not change basic development functions. Those results can be a real fundamental for proposal of different programs for boys and girls in early classes of primary school, because of important and stable differences that remains through several years.

Literature

1. Adams, T. M., Brynteson, P. (1993). The effects of conceptually based physical education programs on attitudes and exercise habits of college alumni after 2 to 11 years of follow-up. *Research quarterly for exercise and sport*, 64, 2 : 208-212.
2. Ball, T.E., Massey, B.H., Misner, J.E., McKeown, B.C., & Lohman, T.G. (1992). The relative contribution of strength and physique to running and jumping performance of boys 7-11. *Journal of Sports Medicine and Physical Fitness*, 32: 364-371.
3. Bonacin, D. (2004). Identifikacija restrukturiranja taxona biomotoričkih dimenzija djece uzrasta 7 godina pod utjecajem transformacijskih procesa. Disertacija, FASTO, Sarajevo.
4. Eiben, O.G., Panto, E. (1987). Biological status, growth and maturation of hungarian youth in function of socio-economic factors. *Internat. symposium of school and university health and medicine*, Prague, 39-40.
5. Pariszkova, J., Carter, J.E.L. (1977). Influence of physical activity on stability of somatotypes in boys. *American Journal of Physical Anthropology*, 44: 327-340.
6. Payne, V.G., Morrow, J.R., Johnson, L., Dalton, S.N. (1997). Resistance training in children and youth: A meta-analysis. *Research quarterly for exercise and sport*, 68, 1: 80-88.
7. Štihec, J., Kovač, M. (1990). Vpliv eksperimentalnega programa vadbe na razvoj nekaterih morfoloških in motoričkih dimenzij 8. letnih učencev in učenk. *Proceedings of the I International symposium "Sport of the young"*, Ljubljana-Bled.
8. Updayke, W.F. (1992). In search of relevant and credible physical fitness standards for children. *Research quarterly for exercise and sport*, 63, 2 : 112-119.

Sažetak

Nakon ulaska u osnovnu školu, djeca uzrasta 7 godina bila su podvrgnuta eksperimentalnom posebno programiranom transformacijskom procesu koji je trajao godinu i pol. Transformacije su praćene uz pomoć 26 kontrolnih varijabli iz morfološkog i motoričkog podprostora i mjerene su tri puta (početak, sredina, kraj tretmana). Cilj postupka je bio praćenje rasta i razvoja oba spola (249 dječaka i 238 djevojčica). Rezultati su pokazali stabilnost razlika koje se ostale ujednačene kroz cijelo razdoblje. Ova informacija svjedoči o obavezi komponiranja i uvođenja diferencijalnih programa po spolu u školske razrede za djecu uzrasta 7-10 godina.

Ključne riječi: *razlike, dječaci, djevojčice*