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THE INFLUENCE OF PHYSICAL EDUCATION CURRICULUM ON THE CORRECTION OF BAD BODY POSTURE AND CHANGES OF MOTOR STATUS IN ADOLESCENCE PERIOD OF SCHOOLGIRLS

(Preliminary communication

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Abstract

The study of the influence of the regular physical education curricula on improving postural and motor status of children is a brief description of the topic of this research. The research sample (25) consists of schoolgirls aged 11 years (plus or minus six months) at the initial measurement. Two groups of variables comprise: variables for the determination of the spine deformities in the sagittal plane (kyphotic and lordotic bad body posture) and variables for the determination of the motor status of the researched subjects (nine motor tests for the assessment of the flexibility, explosive and repetitive strength of the body were applied). Initial, control and final tests gave results that were expressed through the canonical discriminative analysis and have shown that the physical education curricula did not contribute to the total rehabilitation of the kyphotic and lordotic bad body posture, but quite contrary, its implementation brought about the deteriorated postural status. In the same line there was no improvement of the motor status.

Keywords: *spine, kyphotic bad body posture, lordotic bad body posture, motor skills, motor tests, flexibility, explosive strength, repetitive strength, initial measurement, final measurement, discriminative analysis.*

INTRODUCTION

This research paper is a study of the effects of the regular physical education curricula on deformities of the spinal column in the sagittal plane and the motor status of schoolchildren during pre-puberty period

Koturović, & Jerićević, (1966) indicate that it is of vital importance to establish cooperation of physical education and school physician in the detection, prevention, and rehabilitation of the postural disorders. It is significant also to note that over recent years physical education teachers have been attending the conferences and congresses where they discussed poor body posture, deformities and methods of treatment thereof. This is all the more important because the PE teachers are the qualified personnel, trained and educated during their studies to be able to monitor and observe the changes in a young body, and through different forms of physical activity to contribute to reducing the epidemic of poor body posture.

The main cause of poor body posture is the negative effect of gravity on the man's upright position. Regime of typical teaching process in the schools favors this fact, so a major correction task would be to establish a proper relationship of the tonostatic and kinetic musculature and to reach adequate quality in both muscle groups.

The need of greater use of corrective exercises within the regular teaching process" explains the use of certain terms such as rehabilitation, kinetic therapy and corrective gymnastics.

Jeričević (1982), in the work " The role and influence of the two methods that are currently in use in the correction of postural disorders of the spine ", among other things, talks about the role and impact of physical exercises. It is claimed that a large number of children with postural disorders indicates the need to implement a physical education as and educational process and not as a school subject represented in the teaching process just by two or three hours per week .

METHODS

The subject sample was drawn on the basis of the stated deformities of the spine in the sagittal plane of the 25 schoolchildren of the fifth grade of primary school, aged 11 years plus or minus 6 months.

Two groups of variables represent variables for the assessment of postural and motor status. For the assessment of the postural status following variables were selected: kyphotic bad body posture (KKIF) and

lordotic bad body posture (KLOR). Motor status of research subjects was rated by the following battery of tests: to assess flexibility (trunk flexion with a bat (MISK) leg pick up from lying position on the stomach (MZLE) and deep forward bend on the bench (MDPR), to assess explosive strength (throwing a medicine ball from lying down (MBME), standing long jump (MDSK) standing high jump (IASC) and for the assessment of repetitive strength push-ups on the floor (MSKLE), forward bend from lying down (MTRB) and backword bend from lying down (MLED).

Measurements of the deviation of the spine in the sagittal plane were performed in the morning hours with the use of clinical methods, of the somatometric type (plumb, ruler and dermograph). A more lenient criterion was used with its mean values. All results which are in the thoracic region had values greater than 3.5 cm, and in the lumbar region values greater than 4.5 cm were subjected to further observation in the course of the three school semesters.

To measure motor skills generally accepted tests whose validity was demonstrated through previous research, were used.

Group of subjects formed on the basis of identified disorders did not perform any special regime of work but the subjects just pertained to the usual regular physical education curricula contents. For the purposes of this research this group served as a control group and was observed and monitored through the initial, control and final measurements.

RESULTS

Results of measurements were statistically processed by the canonic discriminative analysis.

Table 1. Canonic discriminative functions

Fcn	Eigen V	Pct of var	Cum pct	Can cor	Wilks λ	χ2	DF	Sig
1	.15	90.82	90.82	.36	.85	12.68	4	.01
2	.01	9.18	100.00	.12	.98	1.23	1	.26

Table 2. Correlation functions

TESTS	FUNC 1	FUNC 2
MDPR	.35*	.26
MBME	.14	-.09
MISK	.04	-.03
KKIF	.50*	.86*
MVSK	.69*	-.71*
MZLE	.19	-.42*
MDSK	.25*	-.34*
MLED	.14	-.21*
MSKL	.17	-.19
KLOR	-.10	-.19

Table 3. Centroids of groups

GROUPS	FUNC 1	FUNC 2
01	-.53	.01
02	.22	-.15
03	.31	.13

The results of discriminative analysis of the female control group, i.e. their motor status and the status of the postural defortimities on the spinal column show the increase of the kyphotic curvature and the increase of some motor status parameters.

In the motor area, and the area of the postural deformities on the spinal column, by means of the variables condensation, there were isolated two discriminative variables out of which only one was statistically significant. This discrimination explains the kyphotic bad body posture, from the ares of the postural status variables and three variables (MDPR, MVSK and MDSK) from the area of the motor status.

Significance of the statistically significant, isolated discriminative variable (Eigen V=.15) was tested by the Wilk‘s lambda test (λ=.85) and Bartlett’s chi square test (χ2=12.68) with (DF=4) degrees of freedom. This discrimination separates motor variables MDPR, MVSK and MDSK and the kyphotic bad body posture (KKIF) on the basis of the discriminative coefficient (cum pct=90.82) and its canonic correlation is .36 (can cor=.36) and it explains differences with 90.82% of the intergroup variability (pct of var=90.82).

On the basis of the size and the centroid projection sign on the statistically significant discriminative function, a conclusion can be reached that the kyphotic bad body posture was getting worse, starting from the initial and proceeding all the way to the final measurement.

In the first (initial) measurement, projection of centroids on the discrimination is with the negative sign -.53. In the second (control) measurement, the size of the projection is increasing, especially that a sign is now positive .22. The third (final) measurement shows the increase of the centroids projection .31, which leads to the conclusion that in female control group, there has come to the worsening of the postural status, that is, to the constant increase of the kyphotic curvature. A reason for this state of the spinal column should be sought

for in the fact that besides the regular physical education teaching process, females from the control group were not included in any kind of special program of physical education curricula.

Projection of the centroids on the variables for the estimation of the motor status, which are statistically significant, shows a slight increase in the flexibility of the knee joint, that is, the muscle of the back side of the thigh, and the explosive strength of the legs, which was demontrated through the long jump and high jump. Other variables of the motor status were not significant, which leads to the conclusion that improvement of the motor status in female control group is taking place very slowly and that addiditional stimuli for more active development of motor status are needed.

CONCLUSION

Slight increase in the flexibility of the knee joint, that is, the muscle of the back side of the thigh, and the explosive strength of the legs, which was demontrated through the long jump and high jump, the other variables of the motor status were not significant.

It becomes so much obvious to reach a conclusion that sole attendance of the regular physical education curricula is not enough to significantly improve motor status and that it has no effect whatsoever on the prevention and correction of the postural disorders; therefore it is essential to insist on the additional engagement of schoolchildren, in the sense of the imrovement of motor ability and the prevention, correction and rehabilitation of bad body postures, postural disorders and body deformities.

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