STUDY REGARDING THE EVALUATION OF DYNAMIC BALANCE IN SEVENTH GRADERS

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Abstract

When one speaks of something dynamic, one's thought goes towards an action/activity that is performed quickly. In the current context, dynamism comprised all activity. Physical education and sports are components where motion dynamics is "at home". Without these activities, one cannot speak of a normal psychomotor development in pupils, regardless of their age. At the same time, balance is a basic component of psychomotor skills, its development being a main objective of physical education lesson. This was the reason why this theme was chosen, aiming to observe the level of dynamic balance in pupils who do not practice any athletic activities in their leisure time. The test selected for this study was the "Six-Meter Timed Hop" test, belonging to authors M.P. Reiman and RC. Manske. This study started from the hypothesis stating that *there is a strong positive correlation between the dynamic balance and the somatic parameters of height and weight in seventh graders.*

The following research methods were used: the documentation method, the testing method, the statistical mathematical method, and the graphical representation method. In the end, the study has confirmed partially the working hypothesis.

Key words: pupils, dynamic balance, middle school

1. Introduction

One cannot speak about balance without delimiting the conceptual terms that frames it - motor skills and development of psychomotor skills. M. Epuran (1968) mentions the importance of the four objectives comprised by the psychomotor development - the development of the basic motor skills, of the complex perception of movement, of the basic motor habits, and not in the least, of the body's work capacity. Thus, psychomotor skills must be treated as aptitudes and as a complex function regulating the human behavior (M.Epuran, V.Horghidan 2001). The kinesthetic sensitivity, the sense of balance and rhythm, the limb coordination, the general coordination, the agility, the precision of movements, the laterality, and the body scheme compose the psychomotor skills. According to A. De Meur (1988), the motor, affective, and intellectual development of an individual are tightly connected. This is justified by the fact that movements are tied to the spirit, and the mind is tightly connected to the movements that condition the development. R. Zazzo (1970) completes these aspects with the fact that motor education means training the children for the future professional activities, it means to improve their physical and mental balance, to lead them toward a better control of their body, and to ensure them a better social integration. Vayer, as cited in Horghidan (2000, p 44), states that the education of psychomotor skills is tightly correlated to the children's age and needs.

Constantin Albu et al. identify within the psychomotor education two types of objectives: general and particular. In this context, the development of balance is a particular objective. A study regarding the balance in children was conducted for the zero grade by C. Ababei and A. Ababei (2015), proving that at this age there is a wide spread of the results, which draws attention to the need to look and apply during the physical education lessons the most effective means and methods to meet the aforementioned objective.

2. Purpose, hypothesis, and research methods

The objective of this study was to apply the Six-Meter Timed Hop test in a group of pupils who do not practice any athletic activities in their leisure time. The "Six-Meter Timed Hop" test belongs to the authors MP.

Reiman, RC. Manske who have described it in their book, "Functional testing in Human Performance" (the chapter "Speed, Agility and Quickness Testing"), Human Kinetics, 2009.

This study started from the hypothesis stating that *there is a strong positive correlation between the dynamic balance and the somatic parameters of height and weight in seventh graders.*

The following research methods were used: the documentation method, the testing method, the statistical mathematical method, and the graphical representation method.

3. Research subjects

Table 1 presents the seventh graders from the "Alecu Russo" School, who have accepted to participate in the testing. Of the 14 subjects, 9 were females and 5 males. The weight of the girls was between 44 kg and 71 kg, and the weight of the boys, between 43 kg and 80 kg. The minimum height in the girls was of 149 cm and the maximum one of 170 cm; the minimum height in boys was of 151 cm, and the maximum, of 170 cm.

Table 1 The seventh graders from the "Alecu Russo" School

No.	Name	Gender	Weight (Kg)	Height (cm)
1	B.D.	F	47	163
2	C.E	F	47	152
3	C.D.	F	71	170
4	C.M.	F	62	149
5	D.R.	F	62	149
.6	H.G.	M	43	162
7	N.R.	F	53	156
8	S.F	M	55	159
9	T.M.	M	39	151
10	V.D.	M	80	170
11	V.A	F	44	155
12	V.D.	F	47	159
13	V.L.	F	67	163
14	L.R.	M	49	154

4. Development of the research

The research was conducted in November 2017, and it consisted in the application of the Six-Meter Timed Hop test to the seventh graders mentioned in table 1. The purpose of the test was to assess the subjects' ability to control their dynamic balance developed in the dominant leg over a determined distance (6 m in this case). An emphasis was put on the time during which the surface was crossed.

The test was applied using: adhesive tape to mark the track, timer, an adherent surface (gym), measuring tape.

The working procedure was the following: the start and finish lines were marked with a band at a distance of 6 m between them. The pupils position themselves with one leg behind the start line, their hands on their hips. They were asked to cover the 6 meter distance hopping on one leg, as quickly as possible. The high and long jumps were encouraged. The timer stopped when the subject crossed the finish line. Two repetitions were performed, the best one being recorded. Figure 1 presents the test.

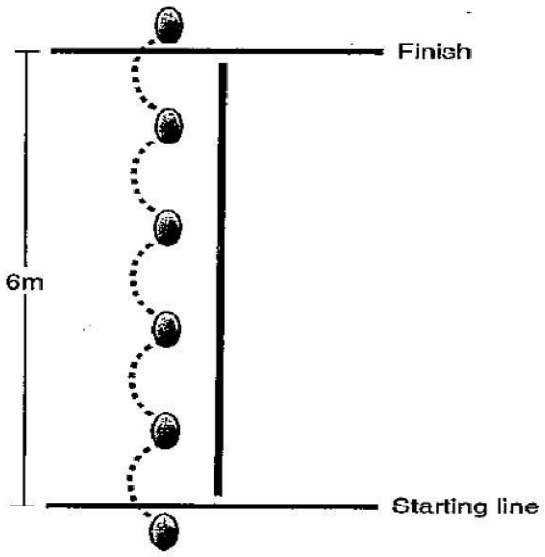

Figure 1 The Six-Meter Timed Hop Test
(Functional testing in Human Performance, Strength and Power Testing, MP. Reiman, RC. Manske, Human Kinetics, 2009)

5. Results of the research

The results of the research are presented in table 2. The results recorded by the pupils are written in parallel with the somatic indices of each pupil.

Table 2 The results recorded by the pupils during the Six-Meter Timed Hop test

No.	Name	Gender	The Six-Meter Timed Hop Test (sec)	Weight (Kg)	Height (cm)
1	B.D.	F	2.03	47	163
2	C.E	F	2.39	47	152
3	C.D.	F	2.40	71	170
4	C.M.	F	2.46	62	149
5	D.R.	F	2.46	62	149
6	H.G.	M	1.89	43	162
7	N.R.	F	2.25	53	156
8	S.F	M	1.89	55	159
9	T.M.	M	2.09	39	151
10	V.D.	M	2.59	80	170
11	V.A	F	1.62	44	155
12	V.D.	F	2.45	47	159
13	V.L.	F	2.63	67	163
14	L.R.	M	2.43	49	154

Table 3 presents the statistical analysis of the recorded data. Thus, the best result was of 1.62 sec, and the worst, of 2.63 sec, the average being of 2.25 sec.

Table 3 The statistical analysis of the recorded data

	N	Minimum	Maximum	Arithmetical mean	Standard deviation
six_meter_timed_hop	14	1.62	2.63	2.2557	.30285

Weight	14	39.00	80.00	54.7143	12.00915
Height	14	149.00	170.00	158.0000	6.97247
Valid N (listwise)	14				

The result of the Pearson correlations between the Six-Meter Timed Hop and weight/height, were the correlation indices presented in table 4.

Table 4 The Pearson correlations between the Six-Meter Timed Hop and weight/height

Correlations for the 7th grade		Weight	Height
six_meter_timed_hop	Pearson Correlation	.639*	.100
	Sig. (2-tailed)	.014	.733
	N	14	14

The index 0.639, p‹0.01, indicates a medium, positive correlation between the Six-Meter Timed Hop Test and weight, meaning that the pupils with a lower weight, below the average weight of the group, have recorded better results at this test. The result is presented in chart 1.

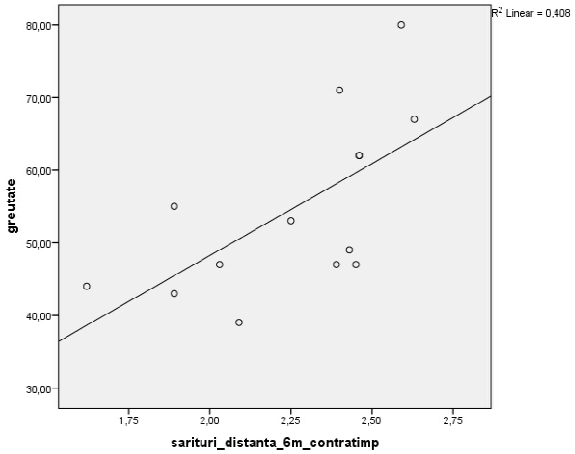

Chart 1 The correlation between the Six-Meter Timed Hop Test and weight

The index 0.100, p‹0.01, indicates a low, positive correlation between the Six-Meter Timed Hop Test and height, meaning that the pupils with a height higher than the average group height have recorded better results at this test. The result is presented in chart 2.

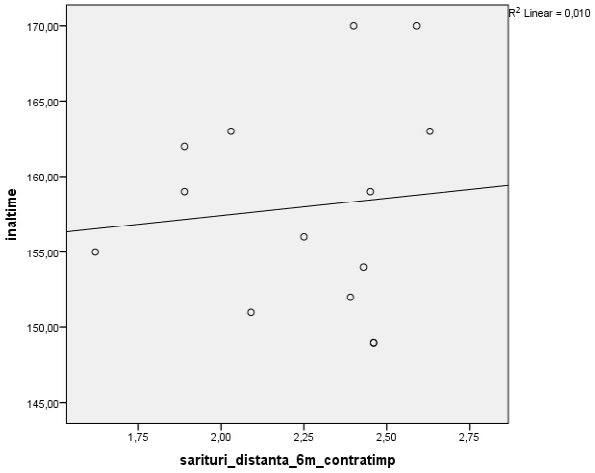

Chart 2 The correlation between the Six-Meter Timed Hop Test and height

6. Conclusions

This study has partially confirmed the working hypothesis, in the sense that there is a correlation between the dynamic balance and the somatic parameters of height and weight in seventh graders who do not practice any athletic activities in their leisure time, but the correlation is medium in the case of weight and low in the case of height. The best results were recorded by the pupils whose weight and height were close to the average values in their group. Unfortunately, the results cannot be generalized because the number of subjects was low. The test must be applied to multiple seventh grades in Bacau County so that the results of the research would become valid. Nevertheless the wide spread of the results reveals a reduced homogeneity in regards to the pupils' dynamic balance.

The author of this study thinks that the development of the sense of balance must be a permanent objective of the physical education lessons, especially at this age, because the modifications happening now in the children's body are major, considering puberty. That is why some negative aspects of this stage can be compensated by introducing in the lessons a higher number of exercises for the development of this component of the psychomotor skills.

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