## Carla Silvia BĂLOI (PUTA)<sup>1\*</sup><sup>®</sup>, Simona PETRACOVCHI<sup>1</sup><sup>®</sup>, Tiberiu Silviu PUTA<sup>1</sup><sup>®</sup>

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**ABSTRACT. Introduction:** In physical education lessons, the proper rationalization of methods targeting psychomotor components will lead to improved coordination, perception, and analysis of body movements and the movements of its various parts in their interaction. A rationalized training system applied in teaching can prevent the phenomenon of insufficient or excessive exercise, promoting the standardized performance of exercises, which plays an important role in students' physical and mental health. **Objective:** The general objective of this study is the rationalization of specific methods aimed at optimizing balance and flexibility in the instructional process for students aged 6-10 years. Methods: The Flamingo Test was used to determine lower body balance, and the Sit and Reach Test was used to measure flexibility. Results: The results of this study revealed significant differences in balance and flexibility performance among students in grades 1-4, both by gender and overall. The Mann-Whitney and Wilcoxon tests were used to evaluate these differences. For balance on one leg, p-values ranged from 0.003 to 0.75, indicating significant differences in some classes, particularly in grades 1 and 2. Flexibility, measured through jumping tests, showed significant differences in grade 2 (p=0.011) and grade 1 (p=0.032). These findings suggest the need for personalized interventions in balance and flexibility training to optimize physical development at these ages. **Conclusions:** Proper structuring of exercises, based on a detailed assessment

<sup>&</sup>lt;sup>1</sup> Faculty of Physical Education and Sport, West University of Timisoara, Romania

<sup>\*</sup> Corresponding author: carla.puta@e-uvt.ro

of each student's individual needs, facilitates improvements in balance and flexibility. This is reflected in both student performance and physical activities, having a positive impact on the overall educational process.

#### Keywords: Balance, Flexibility, students, psychomotor skills

**REZUMAT.** Optimizarea echilibrului și flexibilității prin raționalizarea metodelor în procesul educational la elevii din ciclul primar (vârsta 6-10 ani). **Introducere:** În lecțiile de educație fizică, o raționalizare adecvată a metodelor care vizează componentele psihomotorii va duce la îmbunătătirea coordonării, perceptiei si analizei mișcărilor corpului și ale diverselor sale părți în interacțiunea lor. Un sistem de antrenament raționalizat aplicat în predare poate preveni fenomenul de exercitiu insuficient sau excesiv, promovând realizarea standardizată a exercitiilor, aspect ce joacă un rol important în sănătatea fizică și mentală a elevilor. Objectiv: Objectivul general al acestui studiu este rationalizarea metodelor specifice orientate către optimizarea echilibrului și a flexibilității în procesul instructiv-educativ pentru elevii cu vârste cuprinse între 6-10 ani. Metode: Testul Flamingo a fost utilizat pentru a determina echilibrul membrelor inferioare, iar testul Sit si Reach a fost folosit pentru măsurarea flexibilității. Rezultate: Rezultatele acestui studiu au evidențiat diferențe semnificative în performanța echilibrului și a flexibilității în rândul elevilor din clasele I-IV, atât pe gen, cât și în ansamblu. Testele Mann-Whitney și Wilcoxon au fost utilizate pentru a evalua aceste diferențe. Pentru echilibrul pe un picior, valorile p au variat între 0,003 și 0,75, indicând diferente semnificative în unele clase, în special în clasele I și II. Flexibilitatea, măsurată prin teste de săritură, a arătat diferente semnificative în clasa a II-a (p=0,011) și clasa I (p=0,032). Aceste constatări sugerează necesitatea unor intervenții personalizate în antrenamentele de echilibru și flexibilitate pentru optimizarea dezvoltării fizice la aceste vârste. **Concluzii:** Structurarea adecvată a exercițiilor, pe baza unei evaluări detaliate a nevoilor individuale ale fiecărui elev, facilitează îmbunătătiri ale echilibrului si flexibilității. Aceasta se reflectă atât în performantele elevilor, cât și în activitățile fizice, având un impact pozițiv asupra procesului educațiv în ansamblu.

Cuvinte-cheie: Echilibru, Flexibilitate, elevi, abilități psihomotorii

### INTRODUCTION

## 1. Rationalization of Means for Optimizing Balance in the Instructional Process for Primary School Students (Ages 6-10)

Faigenbaum et al. (2002) confirm that the duration of effort can be a safe and effective conditioning parameter for children. Moreover, by regularly focusing on the development of muscle strength, an improvement in body composition can be observed. An increasing number of boys and girls are participating in programs aimed at developing muscular strength, power, and endurance in physical education

classes and after-school programs. All movements involve mobilizing the body's energy resources to achieve both mental effort (attention, memory, imagination) and muscular effort. The field of physical education and sports builds its specificity only in relation to physical effort as an adaptive complex that produces multiple effects on the human being. According to Lazăr (2020), understanding effort is important in the conduct of physical education lessons, in the choice of exercises, volume, and intensity. Effort tests evaluate the cardiorespiratory response to a given effort, allowing the functional assessment of the individual.

The body's response to effort varies depending on age, gender, nutritional status, ambient temperature, body position, and work capacity. Mas & Riera (2018) demonstrated that movement can improve the cognitive development of structures related to attention, memory, perception, language, and thinking, which will help in interpreting concepts such as space, time, and speed. Furthermore, the systematization of body development facilitates the emergence of motor and cognitive skills and also leads to an expansion in the acquisition of emotional and affective content.

The dosing of effort, program objectives, methods and means used, as well as involvement in other physical activities that must be considered, will lead to long-term improvement in motor qualities. It is recommended that students be offered programs for developing conditional, intermediate, and coordinative capacities to optimize psychomotor components.

Keating (2003) highlighted that, in addition to debates regarding the effectiveness of evaluating physical abilities in young people, it is equally important to acknowledge the existence of other test batteries. Moseichuk et al. (2020) identify coordination abilities as innate to the formation of motor function, which determines their compliance with ergonomic requirements for performing motor tasks. Additionally, certain kinematic and dynamic parameters allow for the selection of the best ways to solve motor problems, while minimizing energy sources.

In physical education lessons, the correct rationalization of means for acting on psychomotor components will determine improvements in the level of coordination, perception, and analysis of the movements of one's own body and its various parts in their interaction. Furthermore, Skitnevskiy et al. (2018) supported that during effort, students improve their coordination of movements, muscle strength, action speed, flexibility, fatigue tolerance, the vestibular system's ability to adapt to acceleration tasks, static and dynamic balance, attention, memory, emotional stability, determination, and courage.

The rationalized training system applied in teaching can avoid the phenomenon of insufficient or excessive exercise, promoting the standardized performance of exercises, which plays an important role in both the physical and mental health of students.

## 2. Study Objectives

## 2.1. General-Objective

The general objective of this study is the rationalization of specific methods aimed at optimizing balance and flexibility in the instructional process for children aged 6-10.

## 2.2.Specific-Objectives

The specific objectives pursued in the current study are:

- 1. Analysis of current evaluation methodologies for balance and flexibility.
- 2. Implementation of a specific methods program to optimize balance.
- 3. Implementation of a specific methods program to optimize flexibility.

## 3. Research Instruments

In this stage of the study, the subjects from grades 1-4 underwent two tests to determine the development of balance and flexibility. The test batteries applied were:

a) The Flamingo Test- to assess the balance of the lower body,

b) The Sit and Reach Test – to assess flexibility.

## 4. Research Methodology and Implementation of Intervention Strategies

## THEMES, PURPOSE AND OBJECTIVES FOR A-I-II-III-IV-A CLASS. FLEXIBILITY DEVELOPMENT (PASSIVE /ACTIVE STRETCHING)

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
		- Holding the knee to the chest for 10 seconds.		-Holding the position for 10 seconds without bending the knee.	- Holding the position on each foot for 10 seconds.
EX.1	OBJECTIVES	- Keeping the knee extended on the supporting leg.	Maintaining the position on each foot for 10 seconds without bending the knee.	-Gradual lowering of the hands from the slat as much as mobility allows, with the knees stretched.	-Maintaining the lower limbs at an angle of 90°.

**Table 1.** Research methodology and implementation of intervention strategies for developing flexibility

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	- Development of the musculature of the lumbar area	- Development of the musculature of the lumbar area	- Development of the musculature of the lumbar area	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, etc.).
PURPOSE	- Development of the musculature of the posterior part of the thigh (biceps- femoral)	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, etc.)	- Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, semi- mebranous)	- Stretching of the large, medium, small fezier muscle.
	-Developing the elasticity of the inguinal ligament	- Stretching of large, medium, small fezier muscle	- Stretching of large, medium, small fezier muscle	- Mobility at the level of the coxo-femoral joint.
	<ul> <li>Stretching of the femoral right muscle</li> <li>Stretching of the large</li> </ul>	-Mobility at the level of the coxo- femoral joint.	- Mobility at the level of the coxo- femoral joint.	
	the large buttock muscle			
DESCRIP- TION OF THE EXERCISE	From the dorsal decubitus, the hands grab the right knee, the other lower limb is with the knee stretched out and the heel on the ground with holding for 10 seconds on bent knee. Runs on each lower limb 3 times.	From sitting with the right left leg bent with the sole glued to the inner part of the thigh, the other lower limb stretched out with the foot in the flexion, the, have the task of maintaining the position on each lower limb for	From sitting with the lower limbs and the back glued to the fixed scale, they will execute bending of the trunk by grasping the slat and holding in position with the knees stretched. The descent from the slat into the lath will be achieved	From dorsal lying down with the lower limbs at an angle of 90°, the legs in flexion, (the heel pushes the opposite leg towards the ground), the knees stretched, the arms near the body. It will execute holding on each foot for 10 seconds.
	times.	lower limb for 10 seconds.	will be achieved gradually.	10 seconds.

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
EX. 2	OBJECTIVES	Holding the position on each lower limb for 10 seconds without bending the knees.	Keep the knee partner lying on the lower leg elevated and on the ground for 10 seconds.	-Holding the position for 10 seconds without bending the knee. -To manage to	- Twisting the trunk on the bent knee. -Holding the
				grab hands.	position for 10 seconds alternately on each foot.
	PURPOSE	- Development of the musculature of the lobar area	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, ischiogambieri, etc.)	- Development of the musculature of the lumbar area	- Stretching of the tensor muscles of the broad fascia
	FUNFUSE	Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, etc.)	- Stretching of large, medium, small fezier muscle	- Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, semi-mebranous)	- Stretching of large, medium, small fezier muscle
		- Stretching of large, medium, small fezier muscle	- Development of the coxo- femoral joint muscle	-Stretching of the large, middle, small fezier muscle	- Mobility at the level of the coxo-femoral joint.
				<ul> <li>Mobility at the level of the coxo- femoral joint</li> <li>Mobility at the shoulder joint.</li> </ul>	- Development of the back muscles
		From standing with the legs spread out more than the shoulder level the trunk performs	The exercise is carried out with the partner. The first pupil is in the dorsal decubitus position with	On pairs of sitting facing each other with their feet close, sole in the sole with the partner, knees	From sitting with the right lower limb stretched forward, the foot in flexion, the other

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
			It will hold for 10 seconds on each leg and will later change with his colleague. This exercise will be repeated 3 times.		
EX. 3	OBJECTIVES	Keeping your hands on your ankles for 10 seconds without bending your knees.	- Holding the position for 10- 15 seconds.	Holding the position for 10 seconds with the torso bent.	-Holding the position for 10 seconds with your knees stretched and keeping your hands at the ankle level
			-Collaboration between the two partners.		- Maintaining the position with the chest as close to the thigh level as possible.
		- Development of the musculature of the lobar area	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, ischiogambieri, etc.)	-Development of the flexibility of the lower limbs Flexibility of the back muscles	- Stretching of the tensor muscles of the broad fascia
	PURPOSE	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, etc.)	- Stretching of large, medium, small fezier muscle	-Flexibility of the shoulder joint	-Stretching of the large, middle, small fezier muscle
		- Stretching of large, medium, small fezier muscle	- Development of the coxo- femoral joint muscle Development of the lumbar muscle		- Mobility at the level of the coxo-femoral joint.

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
		-Elasticity of the gracilis muscle, tailor - Elasticity of the inguinal ligament.		- Development of the back muscles
DESCRIP- TION OF THE EXERCISE	From sitting with their legs close and bending the trunk, students have the task of maintaining the position for 10 seconds.	The exercise is carried out with the partner. From sitting, legs spread out, knees stretched, feet in flexion. One of the two students has the task of grabbing the partner's hands and helping the executor to perform the bending of the trunk to the maximum point of his mobility through a extension of the trunk. This exercise is done alternately.	In pairs one before the other at a distance of 1 m, the legs spread out more than the shoulder level. Students place their hands on the shoulders of the partner and execute a bending of the trunk simultaneously with pressure on the shoulder joint. This exercise will be repeated 3 times with holding for 10 seconds.	2 By 2, one of the students is in the sitting position with the lower limbs stretched out, the feet in flexion and the back of each student will be a pupil to help him in the execution of the movement of bending the trunk with the holding of the hands at the ankle level and maintain the correct position, the, with your back straight. It has the task of progressively pushing the torso of the partner forward to the limit of mobility. This exercise is performed 2 times for 20 seconds per student.

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
		Keep the sitting position		Holding the position for 10	
EX. 4	OBJECTIVES	with your feet close for 10 seconds without bending your knees.		seconds with the torso bent.	
		- Development of the musculature of the lobar area		-Development of the flexibility of the lower limbs.	
	PURPOSE	-Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semitendinos, etc.)		-Flexibility of the back muscles	
		<ul> <li>Stretching of large, medium, small fezier muscle</li> <li>Development of the coxo- femoral joint muscle</li> </ul>			
	DESCRIP- TION OF THE EXERCISE	From sitting with their feet close, the students are tasked with performing the bending of the torso with keeping their hands on their ankles until the moment the chest touches the thighs.		In pairs the back to the back, the legs spread more than the shoulder level, the arms around the body. Students perform a bending of the trunk at the same time as grasping the hands between	
				the lower limbs.	

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
				This exercise will be repeated 3 times with holding for 10 seconds.	
EX.5	OBJECTIVES			<ul> <li>Holding the position for 10 seconds on the executing foot.</li> <li>To reach with your hands at the top of your foot.</li> </ul>	
	PURPOSE			Development of the posterior thigh muscle (biceps-femoral, gastrocnemian, semi-tendinos, semi-mebranous). -Flexibility of the musculature of the lumbar area.	
	DESCRIP- TION OF THE EXERCISE			Individually, in support on one knee, the other lower limb stretched forward with the knee stretched out and the foot in flexion. It will hold the position for 10 seconds. It will run alternately on both lower limbs	
				and repeat the exercise 3 times.	

In the intervention plan for developing flexibility in primary school classes (grades I-IV), a structured algorithm was used based on the principles of progression, individualization, and adaptation to the age and motor development level of the students. The algorithm was designed to ensure the correct sequence of exercises, starting with simple positioning and coordination exercises and progressing to more complex exercises that involve the simultaneous development of muscular strength and joint flexibility.

## **Basic Principles**

**Progression:** The exercises were structured from simpler to more complex to allow students to gradually adapt to the imposed requirements and avoid muscle and joint overexertion.

**Adaptability to the students' age:** The exercises were designed to fit the specific motor needs of each age group, taking into account the natural development of motor skills in primary school classes.

**Individual pace:** The intervention plan allowed each student to progress at their own pace, ensuring a flexible framework in which each method (exercise) could be adapted based on individual mobility and strength.

**Biomechanical efficiency:** Each exercise was designed to develop flexibility, strength, and coordination by maintaining biomechanically correct postures, minimizing the risk of injury.

The intervention plan was structured so that each exercise would meet the specific needs of each class, aiming for the simultaneous development of flexibility and muscular strength through a phased approach adapted to the age and physical preparation level of the students.

The rationalization of the proposed physical exercises had as its primary objective the development of each student's maximum potential through progressive and differentiated adaptation of the methods used according to the specific characteristics of each class (1-4).

This approach allowed for the alignment of physical development objectives with the capabilities and developmental level of each age group, ensuring harmonious and effective growth in muscular development and joint flexibility. Thus, the rationalization of the means for each class was designed according to the motor abilities of the children, long-term objectives, and the requirements for harmonious muscular development, successfully creating an effective intervention plan tailored to the needs of each developmental level.

## THEMES, PURPOSE AND OBJECTIVES FOR A-I-II-III-IV-A CLASS. DEVELOPMENT OF STATIC BALANCE

<b>Table 2</b> . Research methodology and implementation of intervention strategies
for the development of static balance

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
		- Maintaining	- Maintaining	- Maintaining the	-Realization of
		balance	balance on the	position in	the transmission
		throughout	support leg	equilibrium for a	of the ball from
		the exercise	throughout	duration of 30	man to man at
		on the	the exercise	seconds on the	the same time
		support foot		support leg.	as touching the
					ground on the
EX. 1	OBJECTIVES	- Coordination	- Realization of	-The realization	executing foot
		of upper limbs	the movement	of the two forms	
			of bending the	of the bird, offered	- Develop
			knee on the	with two hands	concentration
			support leg.	from the bottom	during and after
				and rolled with	ball transmission
				one hand on the	to avoid multiple
				ground without	imbalances
				the appearance	throughout the
				of imbalance on	exercise.
				the support leg.	
		-Development	-Development	-Development of	-Development of
		of static balance	of balance	balance	balance
	PURPOSE				
		-Concentration	-Concentration	-Concentration	-Concentration
		development	development	development	development
		Students are	Students are	Students are	The collective is
		placed on 3	grouped 4 to	placed 2 facing	placed on the
		columns in	two gymnastics	each other at a	length of the
		support on	benches with	distance of 2m,	gymnastic
		the leg tight,	the shoulder	in support on the	bench, one
		the first	tight and	right foot with a	behind the other,
		student in	straight on the	handball. The pupil	in support on
		each column	direction in	in possession of	the left leg, the
		having two	support on the	the ball has the	other knee
		balls. At the	left leg. To the	task of bending	being raised.
		sound signal	right of the	the trunk	The first student
		the first	bank are placed	simultaneously	will hold the
		student	next to each	with the bending	ball at the chest
		transmits the	subject a copet.	of the knee on	level with two
		balls	The task of the	the supporting	hands and at the
		simultaneous	exercise is to	leg making the	sound signal it

by extending the arms from man to man until the last studentthe executing foot the touch of the cover simultaneouslthe opposite hand of the partner, the of the studentachie of the of the of the studentDESCRIP- TION OF THE EXERCISEand after the balls willbending of the received the balls willthe opposite hand of the cover y with the ball all in supportachie of the of the studentDESCRIP- TION OF THE EXERCISEand after the balls willbending of the support leg, received the support leg, receives the ballsupp support support leg, has the task of the movement of sec the movement of sec same way, studentsthe initial the balance on the balance on the foot on the support leg and knee on the the movement of secachie of the the movement of sec the balance on the following the liftbelf tall	the ex foot t of th simul y w bendi knee supp	tending arms man to until the student fter the	by extending the arms from man to man until the last student	nding the executing foot the touch an to of the cover til the simultaneousl	the opposite hand of the partner, the other student	has the task of achieving the tip of the foot on the ground of
Just Studentby extending the armsthe executing foot the touchthe opposite hand of the partner, the of the partner, the the the the partner, the the the partner, the the partner, the the partner, the the the partner, the the the partner, the the partner, the the the partner, the the partner, the the the partner, the the partner, the the the partner, the the partner, the the partner, the the partner, the the partner, the the the partner, the the the partner, the the the partner, the the 	the ex foot t of th simul y w bendi knee supp	tending arms man to until the student fter the	by extending the arms from man to man until the last student	nding the executing foot the touch an to of the cover til the simultaneousl	the opposite hand of the partner, the other student	achieving the tip of the foot on the ground of
in support on the left foot.times the movement of raised onmaintain knee the g raised onis p the g opposite foot.After the first series they will change the support leg. This be repeated 2 times.descent on the raised on opposite foot.opposite foot.on the the g opposite foot.Image: the support be repeated 2 times.foot clench with the support on exercise will be ing moved to the opposite side.con mon mon read stuImage: the support be repeated 2 times.foot, the mats side.stu aread to the opposite side.Image: the support be repeated a to the opposite side.foot, the mats supposite to the opposite side.stu aread to the opposite to the opposite side.Image: the support on be repeated a to the opposite side.foot, the mats supposite to the opposite side.foot aread to the opposite to the opposite side.Image: the support on be repeated a to the opposite to the opposite side.foot aread to the opposite to the opposite 	the posit the kr main the ba the fo benc will p tim move desce right 2 tim foot cl the su the c foot, being to the	ved the ls will nsmit n back ugh the e way, dents aining ughout xercise oport on eft foot. the first es they change upport . This cise will opeated	last student received the balls will transmit them back through the same way, students remaining throughout the exercise in support on the left foot. After the first series they will change the support leg. This exercise will be repeated	er the dent d the will back h the way, ming the back back back back back back back back	ball all in support on the right foot. The person who receives the ball has the task of lifting the ball off the ground by the movement of bending the trunk and knee on the support leg following the lift to balance and maintain knee raised on	the executing lower limb while bending the knee on support leg and raising arms with the ball in hand up. The second pupil behind him is tasked with receiving the ball from the first student when he is performing the ground touch on the executing lower limb. This exercise will be completed the moment the ball reaches the last student. They are tasked to maintain their balance on the support leg after each ball transmission until the object reaches the last in the column. After completing the exercise they turn face to face in the opposite direction realizing the transmission of the ball from the

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
					changing and the support leg. The student who for 30 seconds had more than 3 imbalances on the gymnastic bench will receive additional tasks, tasks that help to improve the
EX. 2	OBJECTIVES	- Maintaining balance throughout the exercise on the support foot -Coordination of the upper limbs with the executing lower limb	- Maintaining balance on the support leg throughout the exercise - Keeping the knee stretched on the support leg	<ul> <li>Maintaining the position in equilibrium for a duration of 30 seconds on the support leg.</li> <li>-Coordination of partners in the exchange of materials for a duration of 30 seconds without the occurrence of multiple imbalances on the support foot.</li> </ul>	static balance. Developing concentration to avoid multiple imbalances during the exercise.
	PURPOSE	Development of static balance	-Development of static balance -Concentration development	Development of static balance	-Development of static balance -Development of concentration and attention

	CLASS 1	CLASS 2	CLASS 3	CLASS 4
	Students are	Students are	The students are	Students are
	placed on 3	grouped 2 face	placed 2 facing	grouped 2 times
	columns in	to face with	each other at a	before each
	support on	each other at a	distance of 1m,	other with a
DESCRIP-	the leg tight,	distance of 1m	in support on the	bobath ball. The
TION	with the	in support on	left foot with a	student in
OF THE	right arm	the left foot.	ridge before the	possession of
EXERCISE	stretched	Before the	right foot. On the	the ball will be
	sideways	right foot each	signal of the	in support 30
	and the other	subject has a	teacher the two	seconds on the
	raised. At the	cover. They	students push	standing foot
	first sound	have the task	into the same	and 30 seconds
	signal they	of changing	quilt without	on the right
	have the task	the mats	fully leaning on	foot. The other
	of bending	between them	it, towards his	partner after the
	the trunk at	by pushing	partner, then	teacher's signal
	the same	forward towards the	maintaining the	has the task to
	time as		position of	execute with
	bending the knee on the	partner with	balance in	both hands,
		the right foot, following to	support on the	alternately
	support leg with	0	left foot, the, the other lower limb	pushing the ball in different
	touching the	pull the opposite quilt	being with the	directions to
	ground. At	towards them,	knee raised.	force him to
	the second	obliquely	After the thrust	unbalance. After
	sound signal	returning the	of the bucket	the exercise, the
	have the task	inner to the	they have the	roles will change.
	of returning	final position	task of bringing	The student
	to the	with the knee	the opposite	who for 30
	original	raised, the	dome to the	seconds had
	position.	right,	right, from the	more than 3
	Repeat the	repeating	place where it	imbalances will
	exercise 2	without	was originally	receive
	times on	stopping 3	positioned by	additional
	each leg.	times these	pulling it to the	loads, tasks
		movements	right foot,	that help to
		with the	subsequently	improve the
		executing foot.	achieving a	static balance,
			balanced position	strength in the
			throughout the	lower limbs, and,
			exercise. After	development of
			each movement	abdominal
			performed, the	muscles and
			students have	development of
			the task of	flexibility.
			keeping the knee	
			high on the right	

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
				lower limb, permanently maintaining balance on the left foot. They are tasked to perform the exercise in support for 30 seconds on a lower limb without the occurrence of	
				multiple imbalances during	
EX. 3	OBJECTIVES	<ul> <li>Maintaining balance throughout the exercise on the support foot</li> <li>-Coordination of the upper limbs with the lower ones</li> </ul>	To execute the movement of lowering the lower limb from the back simultaneously with the passing of the ball with two hands from below, ensuring the maintenance of body stability on the foot on the bench and synchronized coordination of movements during the ball bird.	execution Maintaining the position in balance with the knee raised after each touch of the mat Spreading the mats on the previous, postero-lateral and postero- medial direction with the foot without the occurrence of imbalances on the support leg.	To be able to maintain their balance after the exercise task is performed.
	PURPOSE	-Development of static balance	-Development of balance	-Concentration development	Development of static balance
		-Development of attention	-Development of concentrated attention	-Development of static balance	
			- Segmental coordination		

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times. after the bird.					
They will					
perform 2					
times the					
movement of					

		CLASS 1	CLASS 2	CLASS 3	CLASS 4
			descent on the right foot and 2 times on the foot they gather with the support on the opposite foot 8 touches of soil each later will change the groups on the gymnastics bench.		
		- Improve balance control on the support leg	Dentin.		
EX. 4	OBJECTIVES	-Developing coordination and response to dynamic changes			
		- Improve collaboration and manipulation technique			
		-Development of static balance			
	PURPOSE	-Development of concentrated attention			
	DESCRIP- TION OF THE EXERCISE	The students are placed 2 facing each other in support on the left leg, arms extended forward and			
		a circle on both sides. Each of them has the task			

CLASS 1	CLASS 2	CLASS 3	CLASS 4
of controlling			
the object			
through the			
push-pull			
movement			
forcing the			
partner to			
lose control			
over the			
balance on			
the support			
leg for 20			
seconds. After			
that time of			
work they			
will change			
the support leg			
performing			
the same task			
without making			
contact with			
the ground on			
the free foot.			

Algorithmization of the intervention plan for the development of static balance in primary classes I-IV has taken into account principles for developing static balance in students from grades I-IV. The plan was structured based on specific objectives, each adapted to the physical and cognitive development level of the children. Therefore, I implemented a set of exercises that gradually addressed the complexity of the requirements, emphasizing the maintenance of balance on the supporting leg, coordination of the limbs, and concentration.

### Basic principles of the intervention plan

**Graduality:** Exercises have been designed to progress from simple to complex exercises, allowing students to develop their skills in a controlled and effective way.

**Adaptability:** Each exercise has been tailored to meet the individual needs of students, given their varying physical abilities.

**Collaboration:** Many of the exercises were structured to encourage intercollegial interaction, which not only improved motor skills but also developed their social skills.

The implementation of this intervention plan for the development of static balance in primary classes I-IV not only facilitated the improvement of physical abilities, but also contributed to the formation of algorithmic approaches, ensuring a coherent progression of exercises, adapted to the needs of each group of students.

The rationalization of exercises aimed at developing static balance was carried out in order to maximize the potential of each class of students, adapting the activities to their specific needs and skills. Each class had clear goals, defined on the basis of students' motor and cognitive capabilities, which allowed for a personalized and effective approach. They were also performed through a detailed analysis of each class, taking into account the specificity of age, the level of physical development and the ability to concentrate students. This approach allowed not only the development of static balance, but also the formation of motor skills essential for future physical activities.

### RESULTS

In the study, we assessed the performance of I-IV students in 2 tests that contain 2 different samples, differentiated by the codes that appear in the table below. So we have the test:

1. FLAMINGO test 2.SIT AND REACH test

#### 1. Results obtained in Class I – Girls - Boys

CHARACTERISTIC	Class 1	Class 1	Class 1	Mann-
CHARACTERISTIC	all	F	В	Whithey
	mean	mean	mean	
VARIABLE	(standard	(standard	(standard	p-value
	deviation)	deviation)	deviation)	
01FlamBal1F00T	0.9 (1)	0.9 (0.7)	1 (1.3)	0.606
02FlamBal1F00T	0.1 (0.3)	0.1 (0.4)	0.1 (0.3)	0.853
p-value (Wilcoxon)		0.003	0.064	
01SARFLEXIBILITY	5.6 (5.1)	5.4 (5.8)	5.8 (4.2)	0.629
02SARFLEXIBILITY	8.8 (4.5)	9.5 (5.1)	7.8 (3.6)	0.286
p-value (Wilcoxon)		0.032	0.682	

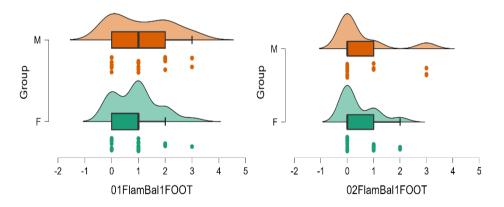
**Table 3.** Characteristics and characterization of variables betweenGE and GC girls and boys in Class1

CHARACTERISTIC	median [Q1 - Q3]	median [Q1 - Q3]	median [Q1 - Q3]
VARIABLE			
01FlamBal1F00T	1 [0 - 1]	1 [0.3 - 1]	0 [0 - 2]
02FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 0]
p-value (Wilcoxon)			
01SARFLEXIBILITY	6 [1 - 8]	5 [1.3 - 6.8]	7 [2 - 9.5]
02SARFLEXIBILITY	9 [7 - 11]	9 [7 - 10.8]	8 [5.5 - 10.5]
p-value (Wilcoxon)			

Table 4. District of Median and Quartile for Class 1 Student Group Variables

## 1.1. Results from the FLAMINGO balance test (01FlamBal1FOOT – 02FlamBal1FOOT)

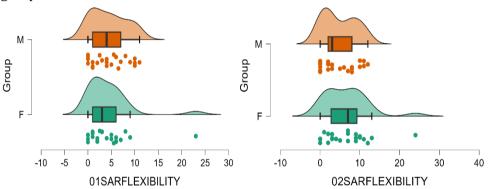
The Wilcoxon test values (p) indicate the statistical significance of the observed differences between the two groups: In the first test session, the difference between girls and boys is significant (p = 0.003), which suggests the existence of notable differences in performance in the girls' group; compared to that of boys, the difference being statistically insignificant (p = 0.064), indicating an increase in value from the girls and boys group and in the third test session. We cannot confirm the same for the Mann-Withney value the differences are insignificant in both groups (p=0.606) and (p=853) respectively.



**Graph 1**. Distribution of FlamBal1FOOT variable (FLAMINGO BALANCE TEST) at time 1 and 2 by group membership. (GE = experimental group, GC = control group).

# 1.2. SIT AND REACH test results for flexibility measurement (01SARFLEXIBILITY – 02SARFLEXIBILITY)

In the study, we also assessed the flexibility development test for both girls and boys, using two distinct sets of Mann-Withney and Wilcoxon measurements for. The Wilcoxon test indicated a significant p-value of 0.032 in the girls' group in terms of differences between groups, while for the boys' group value p=0.682, suggesting that the differences are not statistically significant. The results for the Mann-Witney value indicate that there are no statistically significant differences between girls and boys in terms of flexibility (p > 0.05 for both measurements). However, there are variations in the level of flexibility reported between the two groups.



**Graph 2**. Distribution of SARFLEXIBILITY variable (SIT AND REACH) at time 1 and 2 by group membership. (GE = experimental group, GC = control group).

1.3. Results obtained in Class II – Girls - Boys.

CHARACTERISTIC	Class 2	Class 2	Class 2	Mann-
	all	F	В	Whithey
VARIABLE	mean (standard deviation)	mean (standard deviation)	mean (standard deviation)	p-value
01FlamBal1F00T	0.6 (1)	0.4 (0.8)	0.7 (1.1)	0.75
02FlamBal1F00T	0.1 (0.3)	0.1 (0.3)	0.1 (0.4)	0.86
p-value (Wilcoxon)		0.004	<.001	
<b>01SARFLEXIBILITY</b>	3.5 (5)	5.6 (6.1)	1.6 (2.9)	0.037
<b>02SARFLEXIBILITY</b>	4.8 (5.2)	7.3 (6.5)	2.6 (2.6)	0.011
p-value (Wilcoxon)		0.007	0.014	

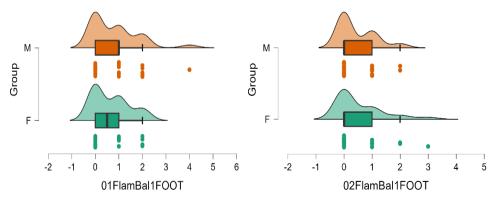
**Table 5.** Characteristics and characterisation of variables betweenGE and GC girls and boys in Class 2

CARACTERISTIC	median [Q1 - Q3]	median [Q1 - Q3]	median [Q1 - Q3]
VARIABLE			
01FlamBal1F00T	0 [0 - 1]	0 [0 - 0.3]	0 [0 - 1]
02FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 0]
p-value (Wilcoxon)			
01SARFLEXIBILITY	1.5 [0 - 4.8]	3 [1.8 - 8.5]	0 [0 - 1.8]
02SARFLEXIBILITY	3 [1 - 8]	8 [1.8 - 10]	2 [1 - 3]
p-value (Wilcoxon)			

Table 6. District of Median and Quartile for Class 2 Student Group Variables

## 1.4 Results from the FLAMINGO balance test (01FlamBal1FOOT – 02FlamBal1FOOT)

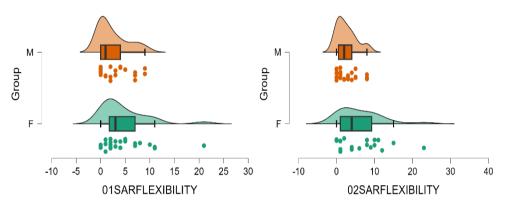
The p-values obtained from the Wilcoxon test indicate the statistical significance of the observed differences between the groups: For the two groups tested (GE-GC), the p-value being 0.004 and <.001, respectively, which suggests a statistically significant difference between girls and boys. These results demonstrate important variations in the performance of girls and boys in the indicators assessed, finding later that Mann-Withney values are above the materiality threshold of 0.05, (p=0.75 - p=0.86).



**Graph 3**. Distribution of FlamBal1FOOT variable (FLAMINGO BALANCE TEST) at time 1 and 2 by group membership. (GE = experimental group, GC = control group).

## 1.5. SIT AND REACH test results for flexibility measurement (01SARFLEXIBILITY – 02SARFLEXIBILITY)

The statistical analysis was performed using the Wilcoxon test to determine the significance of observed differences between groups. P-values from the Mann-Withney variable (0.037 and 0.011) indicate that there are significant differences in the flexibility performance of girls and boys for both tests. The Wilcoxon test results confirm these differences with p-values of 0.007 and 0.014, emphasize the statistical significance of the results.



**Graph 4.** Distribution of SARFLEXIBILITY variable (SIT AND REACH) at time 1 and 2 by group membership. (GE = experimental group, GC = control group).

## 2. Results obtained in Class III - Girls - Boys

CHARACTERISTIC	Class 3	Class 3	Class 3	Mann-
CHARACTERISTIC	all	F	В	Whithey
VARIABLE	mean (standard deviation)	mean (standard deviation)	mean (standard deviation)	p-value
01FlamBal1F00T	0.2 (0.4)	0.1 (0.4)	0.3 (0.5)	0.678
02FlamBal1F00T	0.1 (0.3)	0.1 (0.3)	0.2 (0.4)	0.352
p-value (Wilcoxon)		<.001	0.002	
01SARFLEXIBILITY	5.3 (6.3)	7.3 (7.1)	2.4 (3.2)	0.1
02SARFLEXIBILITY	8 (6.2)	9.2 (7.3)	6.3 (3.7)	0.422
p-value (Wilcoxon)		0.078	0.004	

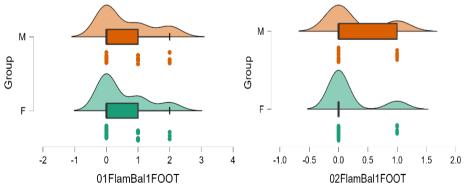
**Table 7.** Characteristics and characterisation of variables betweenGE and GC girls and boys in Class 3

8					
CHARACTERISTIC	median [Q1 - Q3]	median [Q1 - Q3]	median [Q1 - Q3]		
VARIABLE					
01FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 0.8]		
02FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 0]		
p-value (Wilcoxon)					
01SARFLEXIBILITY	3 [0 - 9]	4 [2 - 11.5]	1.5 [0 - 3]		
02SARFLEXIBILITY	6 [3 - 10]	7 [3 - 12.5]	6 [3.3 - 7.8]		
p-value (Wilcoxon)					

**Table 8.** Characteristics and characterisation of variables between GE and GCgirls and boys in Class 3

# 2.1. Results from the FLAMINGO balance test (01FlamBal1FOOT – 02FlamBal1FOOT)

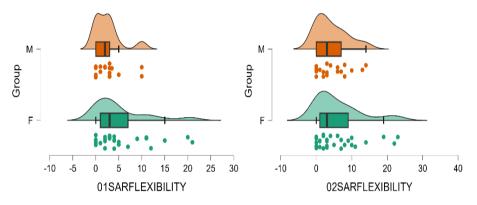
Statistical analyses suggest that there are statistically significant differences between girls and boys of class 3 according to the Wilcoxon test that demonstrate the differences in values for the two genders being at a materiality threshold of < 0.05 (p-value=<.001-GIRLS) respectively (p-value=0.002-BOYS). Subsequently, the p-values obtained from the Mann-Withney test for the test indicator suggest a statistically insignificant difference between girls and boys. These results demonstrate important variations in the performance of girls and boys in the indicators assessed, finding later that Mann-Withney values are above the materiality threshold of 0.05, (p=0.678 and p=0.352 respectively).



**Graph 5**. Distribution of FlamBal1PICIOR variable (FLAMINGO BALANCE TEST) at time 1 and 2 by group membership. (GE = experimental group, GC = control group).

## 2.1.1. SIT AND REACH test results for flexibility measurement (01SARFLEXIBILITY – 02SARFLEXIBILITY)

Statistical analysis using the Wilcoxon test to compare the performance of girls and boys in the flexibility test reveals non-significant statistical differences, with the Mann-Whitney p-value being above the materiality threshold of 0.05. These results underline the importance of separate data analysis by gender, since the significant differences observed in boys (Wilcoxon p-value = 0.004) following the flexibility test, at a statistical significance threshold of p < 0.05, are not reflected in the group of girls, where the significance level exceeds this threshold of 0.05 (0.078 for girls).



**Graph 6**. Distribution of SARFLEXIBILITY variable (SIT AND REACH) at time 1 and 2 by group membership. (GE = experimental group, GC = control group)

## 3. Results obtained in Class 4 - Girls - Boys

In this study, we looked at the performance of class 4 students (girls and boys) on two separate tests, differentiated by codes. The purpose of this analysis was to investigate whether there were significant differences in the performance of girls and boys in these tests using non-parametric Wilcoxon and Mann-Withney testing methods.

	Class 4	Class 4	Class 4	Mann-
CHARACTERISTIC	all	F	В	Whithey
VARIABLE	mean (standard deviation)	mean (standard deviation)	mean (standard deviation)	p-value
01FlamBal1F00T	0.4 (0.7)	0.2 (0.6)	0.6 (0.9)	0.399
02FlamBal1F00T	0 (0)	0 (0)	0 (0)	0.897
p-value (Wilcoxon)		<.001	<.001	
01SARFLEXIBILITY	4.1 (4.4)	3.7 (4)	4.4 (5)	0.11
02SARFLEXIBILITY	5.7 (5.3)	5.6 (5.3)	5.7 (5.7)	0.134
p-value (Wilcoxon)		0.06	0.167	

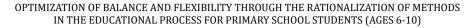
**Table 9.** Characterisation and characterisation of variables betweenGE and GC girls and boys in Class 4

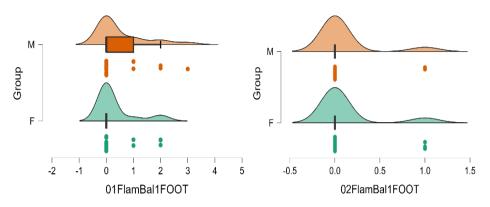
Table 10. District of Median and Quartile for Class 4 Student Group Variables

CHARACTERISTIC	median [Q1 - Q3]	median [Q1 - Q3]	median [Q1 - Q3]
VARIABLE			
01FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 1]
02FlamBal1F00T	0 [0 - 0]	0 [0 - 0]	0 [0 - 0]
p-value (Wilcoxon)			
01SARFLEXIBILITY	3 [0.8 - 5]	2 [1 - 5]	3 [1 - 5]
02SARFLEXIBILITY	4.5 [2.8 - 6.5]	4 [3 - 7]	5 [2 - 6]
p-value (Wilcoxon)			

# 3.1. Results from the FLAMINGO balance test (01FlamBal1PICIOR – 02FlamBal1PICIOR)

The balance test on one leg suggests the existence of significant differences in performance achieved by girls and boys at a materiality threshold (<.001) Of the Wilcoxon variable concluding that following the Mann-Withney variable there are no statistically significant differences between the groups in terms of the result obtained (p=0.399), respectively (p=0.897) the materiality threshold being over (0.05).

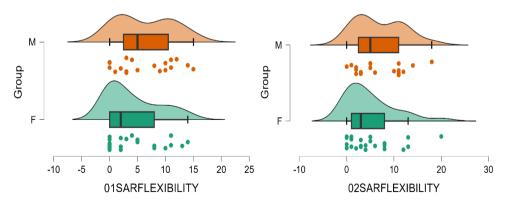




**Graph 7.** Distribution of FlamBal1FOOT variable (FLAMINGO BALANCE TEST) at time 1 and 2 by group membership. (GE = experimental group, GC = control group)

## 3.2. SIT AND REACH test results for flexibility measurement (01SARFLEXIBILITY – 02SARFLEXIBILITY)

The comparative analysis of the two tests did not reveal statistically significant differences between girls and boys of class 4. Both for the first and second tests, the p-values obtained from Wilcoxon (girls p-value=0.06 and boys p-value=0.167 respectively) and Mann-Withney (p=0.11 and p=0.134 respectively) suggest that the variations observed on average and the standard deviation do not they are large enough to conclude that there are real differences between the groups. This indicates a similarity in the level of flexibility between girls and boys at this age, according to the measurements made.



**Graph 8.** Distribution of SARFLEXIBILITY variable (SIT AND REACH) at time 1 and 2 by group membership. (GE = experimental group, GC = control group)

## CONCLUSIONS

1. Based on the observed developments, educational interventions through specific physical exercises appear to be effective in improving both flexibility and balance in primary school students. The results indicate the need to adapt the exercises to the specific characteristics of each class and gender, with special attention to girls' flexibility and general balance.

2. The p-values from the Wilcoxon tests highlight a general improvement in performance during successive evaluations, particularly in flexibility tasks, where statistically significant differences are observed in most classes. This demonstrates the effectiveness of the proposed physical activities within the intervention plan, contributing to the improvement of motor skills.

3. Proper structuring of exercises, based on a detailed assessment of each student's individual needs, facilitates the improvement of both balance and flexibility. This is reflected not only in the students' performance but also in the physical activities, having a positive impact on the overall educational process.

4. In general, no significant differences were identified between boys and girls regarding one-leg balance across all classes. The p-values from the Mann-Whitney tests indicate the absence of statistically significant differences between genders (with minor exceptions in Grade 2). This suggests that balance development is comparable between boys and girls at the analyzed ages.

5. Grades 1 and 2 showed tendencies for better results than older grades (3 and 4) in maintaining one-leg balance, possibly indicating a greater importance of developing this skill at younger ages.

6. Girls tend to score higher than boys in terms of flexibility across all grades, but the differences are not always statistically significant (p-values vary), particularly in Grades 2 and

7. The Wilcoxon tests suggest a general improvement in flexibility from the first to the second test, indicating the effectiveness of the intervention program in developing flexibility among children.

### **Author contributions**

In this research, *Tiberiu Silviu Puta* made a significant contribution to the implementation of strategies for optimizing psychomotor components. Through an innovative and well-founded approach, he recommended the use of effective methods and tools integrated into the intervention process, which facilitated the improvement of psychomotor skills. His expertise was essential in developing a solid theoretical and practical framework aimed at optimizing psychomotor performance, adapted to the needs of subjects from various age groups and skill levels. *Carla Silvia Băloi (Puta)* played an important role in implementing the intervention plan within physical education lessons at the primary school level. She was also actively involved in the data collection process, contributing to the statistical analyses necessary to support the research conclusions.

*Simona Petracovschi* made a significant contribution to this study through the implementation of the intervention plan and the data collection process. She also participated in conducting the statistical analysis, ensuring the accuracy and relevance of the results. Her efforts were crucial to the success of this research study.

## Acknowledgments

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