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The effectiveness of using interactive harmonic exercises in improving the level of some physical and motor abilities and intelligence for students aged (9-10) years

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Abstract

We discussed the proper preparation, directing, and implementation of physical education lessons, and clarification of the duties that fall upon the physical education teacher in addition to his physical and skill duties, which is the duty of the physical education lesson. The problem of the research lies in the fact that interactive harmonic exercises are not implemented accurately by physical education teachers because they require great experience, exceptional efforts, and accuracy in performance. The research aims to identify the level of some physical and motor abilities and intelligence among students aged (9-10) years, and to know the effect of some harmonic exercises. Interactivity at the level of some physical and motor abilities and the level of intelligence among students aged (9-10) years. As for the research hypotheses, they are that there are no statistically significant differences between the pre- and post-tests of the control and experimental groups in some physical and motor abilities and intelligence among students aged (9-10) years, and the absence of statistically significant differences in the post-tests between the control and experimental groups in some physical and motor abilities and intelligence among students aged (9-10) years. . The experimental approach was used, and the research population was identified with the students of the Lebanon Mixed Primary School of the Second Rusafa Education Directorate in Baghdad Governorate for the academic year 2023-2024 AD, aged (9-10) years, numbering (30) students. They were divided into a control group, numbering (15) students,

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and an experimental group, numbering (15) students. (6) students were identified as a sample for the exploratory experiment, and the study was applied. (5) tests to measure physical and motor abilities and one test to measure the level of intelligence. After processing and discussing the data, the researchers concluded that the use of interactive harmonious exercises within a physical education lesson has a positive impact on the variables of the study, as the results showed that there were statistically significant differences between the pre- and post-measurements of the experimental group and in favor of the post-measurement in all tests of physical and motor abilities and in the intelligence level of the students, and that the use of traditional teaching methods showed the presence of There were statistically significant differences between the pre- and post-measurements of the control group in all variables of the study except for the two tests (successive jumps in place for 10 seconds, and the Raven's intelligence test), which indicates the presence of some kind of defect and shortcomings in some components of the traditional teaching curriculum.

Keywords : Interactive combinatorial exercises, physical and motor abilities, intelligence level

Introduction:

It is necessary to pay attention and care to school sports and to properly prepare, direct and implement its lessons, which constitute a basic and important step through which the required goals are achieved, since physical education is an integral part of general education and cannot be dispensed with, and since the physical education lesson represents the sound ground upon which other branches of education are built, therefore" ,the physical education teacher must be concerned with all the matters that contribute to the success of the lesson through his scientific competence and the methods, steps and tools that help him achieve his goals due to the importance of the activities" ".Sports activities contribute to the physical, mental, and educational development of all educational levels "(Al-Jubouri and Sukkar, 1989, p. 9). Students 'mental development can be developed through various physical activities, such as physical exercises in general, harmonious exercises in particular, and small games, as" such activities depend on perception, which depends on the mental processes that it performs through understanding "(Rizk, 1977, p. 77). Therefore, the physical education teacher has a duty in addition to his physical duties. Skill is the duty of the physical education lesson and the interactive combinatorial exercises it includes. Its duty is to put students in front of a set of motor problems, the completion of which requires a specific behavior and special performance, and in this way their mental abilities are revealed in their thinking and action. Since the motor structure of a person is linked to the mental structure, as movement gives permanence to the organic systems, maintains them, and gives learning creative thinking, so keeping up with technological progress, which is coupled with mental requirements, is a necessity. Due to the existence of a close relationship between the motor abilities that are characterized by interactive harmonic exercises, through which we seek to develop the level of intelligence, the two researchers believe that the importance of their research stems from this fact. The problem of the research lies in the fact that interactive harmonic exercises are not implemented accurately by

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physical education teachers because they require great experience, exceptional efforts, and accuracy in performance, or it may be due to the students 'weakness in implementing them in conditions that require high nervous and muscle compatibility. Therefore, they decided to use Interactive harmonic exercises because of their great importance and impact on the development of some physical and motor abilities and the level of intelligence, as it is noted that there is a weakness in the rates of academic achievement at specific levels, with the presence of exceptional cases among some, and this, in the opinion of the researchers, is due to the pressures that fall on students through doubling theoretical lessons and neglecting the physical education lesson and thus neglecting the physical and motor elements that contribute to raising the level of intelligence, for which harmonic exercises are one of the best tools.

Among the studies that dealt with interactive combinatorial exercises is a study (Mohamed Saber 2022 AD), which was conducted on (20) junior football players under (15) years old at the Banha Club - Qalyubia, which concluded that the proposed program using interactive combinatorial abilities training had a positive impact on some of the physical abilities of the sample under study, and the proposed program using interactive combinatorial abilities training had a positive impact on some functional variables in the sample under study. Research (Ali, 2022, p. 45, 81). And the study (Amani Salah 2022 AD), which was conducted on the female fencing juniors at Port Fouad Sports Club under (17) years old and the (20) juniors. The results of the program applied to the research sample resulted in a significant improvement in the level of coordination abilities (the ability to coordinate motor coordination, the ability to perform accurately, the ability to change direction, the ability to connect movement) and the level of speed of performance of foot movements for the female fencing juniors under 17 years. year, and the proposed training program applied to the research sample led to a significant improvement in the level of both the combinatorial abilities and the level of speed of performance of the footwork under study for female fencing juniors under 17 years of age, and the results of the pre- and post-measurement showed significant differences in the level of both the combinatorial abilities and the level of speed of performance of the footwork, in favor of the post-measurement (Ali Haddou, 2022, p. 233). The research aims to identify the level of some physical and motor abilities and intelligence among students aged (9-10) years, and to know the effect of some interactive harmonic exercises on the level of some physical and motor abilities and on the level of intelligence among students aged (9-10) years. As for the research hypotheses, there are no statistically significant differences between the pre- and post-tests of the control and experimental groups in some physical and motor abilities and intelligence among students aged (9-10) years. There were statistically significant differences in the post-tests between the control and experimental groups in some physical and motor abilities and intelligence among students aged (9-10) years.

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Method and tools:

The researchers adopted the experimental method“ ,which is based on direct and realistic dealing with various phenomena and is based on two basic pillars: observation and experimentation of all kinds ”(Taha Muhammad, 2022, p. 65), so the researchers used the experimental method with control and experimental groups with a pre- and post-test, as it is one of the most appropriate scientific methods to solve the research problem. The research sample was chosen intentionally, consisting of students from the Lebanon Mixed Primary School affiliated with the Second Rusafa Education Directorate in Baghdad Governorate for the academic year 2023-2024 AD, aged (9-10) years, and numbering (30) students, after female students were excluded. Through lottery, one classroom was identified as a control group, numbering (15) students, while the other class was identified as an experimental group, numbering (15) students. (6) students were selected as a sample for the exploratory experiment, and the specifications of the research sample were fixed in the variables of height, weight, and age, as in Table (1). It is noted that the value of the skewness coefficient is less than (+1), which indicates the homogeneity of the sample in the mentioned variables.

Table (1) Homogeneity of the sample members in the variables of height, weight, and age

Torsion coefficient	The mediator	Standard deviation	Arithmetic mean	Variables	T
0.833	10	2.440	10.678	**the age**	1
0.280	50	3.462	50.324	the weight	2
0.329	150	3.484	150.383	Total length	3

The researchers used means of collecting information, devices and tools represented by Arab and foreign sources, observation and experimentation, an auxiliary work team, a medical scale to measure weight, an electronic stopwatch (2), a ruler, a tape to measure the total length, wooden bars, chairs (2), rope, chalk, and a whistle. The tests used are:

·Running test (8) (Al-Khudari, 2022, page 17).

·Sitting from lying down test (Sharif and Abu Bakr, 2021, page 5).

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·Test of successive jumps in place 10 seconds (Al-Khudari, 2022, page 17).

·Test of bending the torso forward from standing (Al-Khudari, 2022, page 17).

·Rebound running test (Al-Khudari, 2022, page 17).

·Raven Intelligence Test (Mustafa, 2022, p. 1).

The researchers conducted the exploratory experiment on (6) students from the Lebanon Mixed Primary School, aged (9-10) years, in order to extract the scientific foundations of the tests, which are represented by honesty, consistency, and objectivity, despite their scientific weight and their presence in the sources, and they have previously been applied to the Iraqi environment, and as a result of distributing questionnaire forms to experts and specialists to seek their opinions in determining the most important tests appropriate for measuring physical and motor abilities and the level of intelligence, according to What is mentioned (Thaer Daoud 2020 AD) is“ ,The content validity aims to know the extent to which the test or scale represents aspects of the trait, characteristic, or period to be measured, and whether the test or scale measures a specific aspect of this phenomenon or measures it entirely ”(Al-Qaisi Th., 2020, p. 25). Thus, the researchers obtained the content validity of all tests nominated for application, and the reliability coefficient of the tests was also extracted. Using the (test and retest) method, by conducting the exploratory experiment on (6) students from Lebanon Primary School, and using the simple correlation coefficient (Pearson) between the scores of the first and second measurements, it was concluded that all the tests had high reliability because all of their calculated values were at a significant level**)** .**Say (**It is smaller than the value of the approved significance level (0.05) as in Table (2), and in order to identify the objectivity of the tests, the value of the simple correlation coefficient (Pearson) was calculated between the scores of the first and second judgments, and it was concluded that all tests are of high objectivity due to the significance level values being**) Say (**She was It is smaller than the value of the approved significance level (0.05) as in Table.(2)

Table (2) Validity, reliability and objectivity of the tests nominated for application

Connotation	Objectivity	Connotation	Consistency	Tests	T
spiritual	0.912	spiritual	0.821	Running figure 8	1
spiritual	0.913	spiritual	0.922	Sitting from lying down	2

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spiritual	0.845	spiritual	0.805	Consecutive jumps in place 10 seconds	3
spiritual	0.856	spiritual	0.837	Bend the torso forward from standing	4
spiritual	0.842	spiritual	0.796	Bounce running	5
spiritual	0.866	spiritual	0.834	Raven's intelligence test	6

Then the two researchers conducted the pre-tests before starting to implement the interactive harmonic exercises for all tests of physical and motor abilities and on members of the research sample from the two groups (experimental and control) over two days. The researchers conducted the pre-tests on the (experimental group), represented by the fourth grade, Division (A), on Sunday, 10/5/2023, at nine o'clock in the morning, in the school yard. As for the sample (the control group), represented by the fourth grade, Division (B), on Sunday. Monday, 10/6/2023, and also in the school yard. Before starting the statistical treatments, the researcher conducted a (normal distribution) test in the) **Shapiro-Wilk**) (Al-Qaisi Th., 2020, p. 29 (For the tests (running in shape (8), sitting from lying down, successive jumps in place for 10 seconds, bending the torso forward from standing, bouncing running, and Raven for intelligence), the values of which were in the test) **Shapiro-Wilk** (respectively (0.784, 0.811, 0.759, 0.765, 0.790, 0.810) and their significance level values) **Say** (They were respectively (0.067, 0.084, 0.069, 0.073, 0.066, 0.072), and given that all significance level values are) **Say** (For all tests, it is greater than the approved significance level of (0.05), which indicates that it has a normal distribution. Therefore, researchers must use parametric statistics. Therefore, the t-test was used for independent, uncorrelated, and equal samples. Thus, the sample is considered equal in all tests, and the number is shown in Table .(3)

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Table 3: Test values in the test) Shapiro-Wilk(

T	Tests	Shapiro-Wilk		
		Statistic	Df	Say
1	Running figure 8	0.784	30	0.067
2	Sitting from lying down	0.811	30	0.084
3	Consecutive jumps in place 10 seconds	0.759	30	0.069
4	Bend the torso forward from standing	0.765	30	0.073
5	Bounce running	0.790	30	0.066
6	Raven's intelligence test	0.810	30	0.072

Then the researchers calculated the parity between the two groups (the control and the experimental) in all tests of physical and motor abilities and in the intelligence test using the t-test for independent and uncorrelated samples equal in number, and it was concluded that the two groups (the control and the experimental) were equivalent in all tests and in the level of intelligence due to the fact that all the values of the calculated level of significance were) **Say** (It is greater than the value of the approved significance level of (0.05), which indicates the equality of the two samples, as shown in Table.(4)

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Table (4) The arithmetic means, standard deviations, and T-value calculated for the pre-test and for the control and experimental groups in the tests of physical and motor abilities and in the Raven's intelligence test

T	Variables	empiricism		Female officer		T	Say	Connotation
		Q	A	Q	A			
1	Running figure 8	11.100	1.028	11.266	0.944	0.654	0.061	Insignificant
2	Sitting from lying down	9.433	1.006	9.233	0.817	0.845	0.211	Insignificant
3	Consecutive jumps in place 10 seconds	9.600	1.328	9.866	0.973	0.887	0.152	Insignificant
4	Bend the torso forward from standing	3.700	1.859	3.800	1.730	0.216	0.312	Insignificant
5	Bounce running	5.890	0.479	5.976	0.523	0.669	0.230	Insignificant
6	Raven's intelligence test	12.33	5.148	13.200	5.671	0.620	0.131	Insignificant

When implementing the main experiment, the researchers developed a plan to implement the proposed interactive harmonic exercises curriculum within the proposed teaching plan, as shown in Table (5), and the researchers adhered to the main lines of the plan as follows: (Preparatory Section) (10) minutes by (2) min For the introduction, preparing the class, and

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recording absences, and (8) minutes for the warm-up and physical exercises, since this section aims to prepare the body. The (main section) is (30) minutes, which includes (7) minutes for the educational activity, and the remaining (23) minutes is for the applied activity, as the section aims to improve some motor abilities and improve intelligence through some of the suggested interactive harmonic exercises that were prepared and designed to suit the desires and inclinations of students according to this age stage. And (the final section) (5) minutes. The goal of this section is to calm down and leave .

Table (5): Teaching unit sections

Degrees in the graph	Time within (16) units	Time during the unit	Teaching unit sections	
80	160	10d	Warm up	Preparatory Department
56	112	7d	Educational activity	Main section
184	368	23d	Applied activity	
40	80	5d	Concluding section	
360	720	45minutes	the total	

The lesson plan included (2) teaching plans per week and an average of (8) plans per month. The time for physical education lessons in primary schools is (45) minutes.

The researchers conducted the post-tests after implementing the proposed interactive combinatorial exercises curriculum for the experimental group on 12/5/2023 for the experimental group and on 12/6/2023 for the control group. It was taken into consideration that the post-tests would be conducted in the same conditions used when implementing the pre-tests inside the school in terms of time, place, tools and necessary equipment, and with the help of the same assistant work team in the pre-test. The researchers used the ready-made program))**IBM SPSS Ver25** To perform statistical treatments and extract the values of the arithmetic mean, standard deviation,

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median, skewness coefficient, test **T test** For non-independent interdependent groups, test **T test** For independent, unrelated groups, Pearson's simple correlation coefficient test) **Shapiro-Wilk**. (

Results :

Table (6) shows the arithmetic means, standard deviations, and T-value calculated for the pre- and post-tests of the experimental group in the tests of physical and motor abilities and the Raven's intelligence test.

T	Variables	Pretest		Posttest						
		Q	A	Q	A	MF	ug ^{2}F	T	ay	onnotation
1	Running figure 8	.100	028	433	678	666	246	774	000	spiritual
2	Sitting from lying down	433	006	.100	125	66 -	250	660	000	spiritual
3	Consecutive jumps in place 10 seconds	600	328	.733	529	13 -	406	791	001	spiritual
4	Bend the torso forward from standing	700	859	166	877	46-	493	975	000	spiritual
5	Bounce running	890	479	243	897	646	154	189	012	spiritual

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6	Raven's intelligence test	.333	671	.966	872	63 -	489	124	000	spiritual

Table (7) Arithmetic means, standard deviations, and T-value calculated for the pre- and post-tests for the control group in physical and motor abilities tests and the Raven's intelligence test

T	Variables	Pretest		Posttest		MF	Mug H ²F	T	Say	Connotation
		Q	A	Q	A					
1	unning figure 8	1.266	.944	0.766	.773	.500	.190	.628	.010	spiritual
2	itting from lying down	9.233	.817	9.466	.860	.23 -	.078	.971	.000	spiritual
3	onsecutive jumps in ace 10 seconds	9.866	.973	9.900	.061	.03 -	.089	.372	.064	nsignificant
4	end the torso forward om standing	3.800	.730	4.266	.574	.46 -	.228	.046	.000	spiritual

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5	ounce running	5.976	.523	5.623	.609	.353	.090	.907	.002	spiritual
6	aven's intelligence test	3.200	.148	3.100	.333	.100	.394	.072	.211	nsignificant

Table (8) Arithmetic means, standard deviations, and T-value calculated for the posttest for the experimental and control groups in the physical and motor abilities tests and the Raven's intelligence test

Connotation	Say	T	The female officer		empiricism		Variables	T
			A	Q	A	Q		
spiritual	0.000	7.094	0.773	10.766	0.678	9.433	Running figure 8	1
spiritual	0.000	2.449	0.860	9.466	1.125	10.100	Sitting from lying down	2
spiritual	0.000	2.451	1.061	9.900	1.529	10.733	Consecutive jumps in place 10 seconds	3
spiritual	0.000	2.012	1.574	4.266	1.877	5.166	Bend the torso forward from standing	4

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spiritual	0.000	1.918	0.609	5.623	0.897	5.243	Bounce running	5
spiritual	0.000	6.471	4.333	13.100	3.872	19.966	Raven's intelligence test	6

Discussion:

By observing Table (6), it is clear that the result is consistent with what the researchers expected in their first hypothesis, as the results showed that there were statistically significant differences between the pre- and post-measurements of the experimental group and in favor of the post-measurement in all tests of physical and motor abilities and in the level of intelligence as well. The researchers attribute the reason for this to the positive effect of the experimental group's students 'use of the interactive harmonic exercises curriculum proposed and developed by the researchers in the physical education lesson, and the results shown in Table (7) also showed the presence There were statistically significant differences between the pre- and post-measurements of the control group and in favor of the post-measurement in all tests of physical and motor abilities except for the tests (successive jumps in place for 10 seconds, and the Raven test of intelligence). The researchers attribute the reason for this to the correct use of traditional exercises and their diversification in the physical education lesson, which added a significant effect between the pre- and post-tests in the tests (running figure 8, and sitting from Lying down, and bending the torso forward from standing) while the lack of focus on exercises to develop the level of intelligence may have led to weakness in my tests (successive jumps in place for 10 seconds, and the Raven's intelligence test). The results shown in Table (8) also indicate that there are statistically significant differences in the post-measurements between the experimental and control groups and in favor of the experimental group in all tests of physical and motor abilities and the Raven's intelligence test. The researchers believe that this is the reason for the group's students 'superiority. The experimental study on the students of the control group is due to the contributions of the exercises of the proposed curriculum, which depends on the use of interactive combinatorial exercises, their quality, prepared and implemented, and applied according to their scientific foundations, which helped greatly in raising the students 'abilities by giving them freedom of movement in different, diverse and interesting fields and improving their physical and motor abilities and their level of intelligence. This result reached by the researchers is consistent with what was indicated by (Makarem Helmy et al. 2000)" that the use of exercises and games In a physical education lesson, it leads to the activation of the nervous and physical system. It also plays an influential role in developing the psychological aspects of accepting the parts of the lesson with happiness and joy, which generates motivation and inclination towards practicing sports "(Abu Hajra et al., 2000, p. 125). It also agrees with what was indicated by (Abdulaziz Mustafa 1995) that" many researchers in the sports field have emphasized the The importance of games and motor exercises in order to

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improve students 'abilities, and they explained that practicing motor activity works as a means of physical development as well as developing basic movements and skills "(Mustafa A., 1995, p. 29), and it agrees with what was indicated by (Schreiner **Schreiner** 2009) AD" (There are important points when training harmonic abilities, which are diversity, accuracy, error correction, focus on performance, motivation for the buds, and the appropriateness of the exercises given to the dental stage, as well as control during the units on controlling performance, as well as good rhythm and motor balance in different situations) "Schreiner, 2009, p. 221 ,(It also agrees with what was stated by (Khair al-Din Ali and Izzat Mahmoud, 1985), quoted by (Ozolin)" :Special exercises are those that aim to develop the physical and psychological qualities associated with the chosen type of sporting activity, and also aim to teach the technique associated with that activity " (Owais and Kashif, 1985, p. 90). It also agrees with what was stated by (Ellen Wadie, 1996)" ,that preliminary games seek to achieve many goals" ".Educational agility is characterized by its multiple and varied situations when used. By practicing it, children acquire physical, cognitive, and skill abilities in proportion to their stages of development and the individual differences between them "(Faraj, 1996, p. 395), and it agrees with what was stated by (Amr Hamza et al. 2016 AD)" that interactive agility is the most specialized ability of agility, as it is what is most often used to describe the motor quality of agility that appears in Sports activities) "Hamza, Nour El-Din, and Abdel Samie, 2016, p. 26).

The researchers also believe that interactive harmonic exercises of all kinds affect morals, as through practicing these exercises students acquire many moral values and strengthen them. They also work to develop the spirit of cooperation and help in obedience, in addition to acquiring some sound social and moral habits such as gaining order, tolerance, cooperation, courage, and the level of intelligence that students acquire through practicing harmonic exercises during a physical education lesson, and this is consistent with what Kamal pointed out. Darwish and Amin Al-Khouli, 1990 AD" (Play and recreational activities are an important aspect of the development of human behavior during the various stages of growth, as the individual learns through play more than any other activity "(Darwish and Al-Khouli, 1990, p. 87). The results reached by the researchers are also consistent with what was stated by (Kurt Meinel, 1987 AD) that" the level of endurance among children between the ages of seven and ten years It requires a rapid stage of growth and development where the child is naturally able to run long distances and has a good ability to rest and have great endurance) "Meinel, 1987, pp. 248-265)

The researchers also attribute the reason for the improvement of the experimental group to the effectiveness of the interactive harmonic exercises curriculum, which through a well-organized lesson contributed to putting the students in a state of constant movement, that is, giving the students the freedom to work according to their abilities and talents, which made them rely on themselves in the work or motor task assigned to them, which motivated them to exert their maximum energy in the lesson. The reason for the improvement is also due to the number of repetitions when applying the harmonic physical exercises, which gave the students the appropriate time to practice and repeat, and this is consistent with what he indicated) .**Schmidt ,Craig 2000** (م

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"Teachers or trainers should encourage learners to perform as many exercise attempts as possible " (Schmidt & Craig, 2000)

Conclusions:

.1The use of interactive harmonic exercises within a physical education lesson has a positive impact on the variables of the study, as the results showed that there were statistically significant differences between the pre- and post-measurements of the experimental group, in favor of the post-measurement, in all physical and motor ability tests, and in the students ' intelligence level.

.2Using traditional teaching methods, the results showed that there were statistically significant differences between the pre- and post-measurements of the control group in all variables of the study except for the two tests (successive jumps in place 10 seconds, and the Raven's intelligence test), which indicates the presence of some kind of defect and shortcomings in some components of the traditional teaching curriculum.

Recommendations:

.1Paying attention to interactive harmonic exercises within the physical education lesson because of their great importance in improving physical and motor abilities and developing the level of intelligence.

.2When developing motor activity programs, it must include different types of interactive combinatorial exercises in order to develop all aspects of students 'motor and cognitive development .

.3Further studies should be conducted to identify the effect of interactive harmonic exercises on samples that were not covered in the current study, in terms of age and for both genders.

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