ISSN: 2392-5442 ESSN : 2602-540X		Sport system journal
V/13 N/01 Year/2026		International scientific journal published by: Ziane Achour –Djelfa- Algeria
P 627 - 641		Received: 2026-01-21 A ccepted: 2026-02-24

The reality of the level of health-related physical fitness among females in some Algerian states.

Tebbal Bachir [1]*, Hadj aissa Mohamed Tayeb[2], Belgouchi Rabah[3]

[1]1 Associate Professor (level B), Higher Teacher Training School". The "Laghouat, b.tebbal@ens-lagh.dz

[2] Associate Professor (level A), University of Amar Telidji Laghouat, med.hadjaissa@lagh-univ.dz

[3] Associate Professor (level B), University of Amar Telidji Laghouat -Algeria, rabah.belgouchi@lagh-univ.dz

Abstract:

The study aims to identify the level of health-related physical fitness among adolescent girls in some Algerian states, specifically their cardiorespiratory fitness and musculoskeletal fitness. For this purpose, we used the descriptive survey method on a random sample composed of 3814 teenage female students from Algerian secondary schools. For data collection, we applied physical tests such as Cooper's test for respiratory endurance, arm push-up test, sit-up test, seated trunk flexion test, and Body Mass Index (BMI). The results showed that adolescent girls in Algerian high schools generally have a weak level of health-related physical fitness, including cardiorespiratory fitness, muscular strength, muscular endurance, and flexibility. Based on this, the study recommended addressing the lack of physical activity, improving physical education curricula, and increasing awareness of healthy lifestyles among students, teachers, and parents.

Keywords: Health-related, Adolescent girls, the level of health-related physical.

Corresponding author / b.tebbal@ens-lagh.dz

1. INTRODUCTION

Health-related physical fitness (HRPF) encompasses cardiorespiratory endurance, muscular strength, flexibility, and body composition, serving as a robust predictor of cardiometabolic health and longevity (García-Hermoso et al., 2022). Evidence suggests that low HRPF levels during adolescence tend to persist into adulthood, significantly elevating the risk of obesity, type 2 diabetes, and cardiovascular diseases (silva d et al, 2020) Despite the World Health Organization's (2020) recommendation of at least 60 minutes of daily moderate-to-vigorous physical activity, global adherence remains suboptimal, particularly among adolescent girls) Bull(2020 ، Furthermore, HRPF is recognized as a powerful marker of health; as highlighted by (Ortega, 2008) measuring its components provides critical diagnostic information regarding current and future health risks facing individuals and societies alike. Therefore, assessing these physical indicators is essential for identifying health trends and developing effective intervention strategies within the educational environment."Many studies have confirmed that it has great importance in life in general due to its noticeable impact on improving people's health, and its effective role in developing the level of athletes, and that many people now view physical and motor exercises as less important to their lives, forgetting that they are in dire need of performing physical effort and movement to gain physical fitness and prevent movement deficiency diseases, which have become one of the most dangerous diseases of our current era. Physical fitness has also been linked to several areas, including the ability to achieve productivity in the field of work, personal health, stature, and other areas, meaning that physical fitness has an important role and an essential element that people or individuals must enjoy for the sake of health.

1.1 Research problem:

With the onset of puberty, many physical changes occur such as increased body fat, especially in females, which interferes with the aerobic performance of adolescents.(Minattoet et al, 2016)Studies have shown that certain fitness indicators are directly linked to improvements in cardiovascular health.(Silva, 2020, p. 162-167) Low levels of physical fitness and lifestyle-related diseases during childhood and adolescence are associated with increased risks of cardiovascular disease during adulthood, such thatThese scientific studies conducted by some specialists and those interested in physical activity and health confirmed the existence of indications confirming the low level of physical

activity and the spread of obesity among a large segment of society, young and old. (Marah Khaled et al.) added in their study to monitor the level of physical activity periodically in order to know the levels of physical activity and reduce the degree of inactivity among adolescent girls in the school environment, as well as to work on encouraging sports activities within Algerian educational institutions. (Khaled, et al 2019) and It is widely recognized that physical fitness is a powerful predictor of health-related outcomes, both in childhood and adulthood, and an important determinant of current and future health status. (Evaristo et al s, 2019) And results This is amazing Research thatI did a follow up.For levels Activity Physical And health I have Juniors I explained One of The pearlAsat that an average Idleness Physical They haveIncreasedfrom54.7% in phase Childhood from (7-12 year)To reach in phase maturity after passage11year(18-23 years) to 71.1% (Al-Hasanat., 2009 p 179) In addition to that during a period adolescence there low in Activities Physical Especially Activities High Density And more in dominance Activities that involves on little from Effort Physical, Which Leads to low Levels Fitness antenna Show Levels Low from Fitness antenna In a way more Clarity I have Teenagers not Activities physically They have Fats appendix in Body (Diego Augusto Santos, 2017).

We, as sports specialists, have the lion's share in this, as our role can be considered essential in this process, as our role is considered preventive through regulated physical and sports activity. And soWho is this?We ask the following question:

- What is the level of health-related physical fitness among teenage girls in some states of the country?

-Partial questions:

- What is the level of cardiorespiratory fitness of teenage female students?
- What is the level of musculoskeletal fitness of teenage female students?

1.2 The general objective of the study:

Our study aims to know the level of cardiorespiratory fitness, as well as to identify the level of musculoskeletal fitness, muscular endurance and muscular strength of the upper limbs. We also focus on flexibility by identifying the level of adolescent girls, as well as identifying the body mass index, as we, the researchers, want.To put the finger on a major problem facing an important segment of society and its public health.

1.3 Terminology:

- Health-related fitness: Health-related fitness refers to those components of physical fitness that are related to health such as cardiovascular endurance, muscular strength, flexibility and body composition. (Danie, 2012).

Researchers know it as: These are the elements represented by cardiorespiratory fitness and musculoskeletal fitness, including muscle strength and endurance, in addition to flexibility and the individual's body composition. These elements are closely related to health.

-adolescence: Adolescence in the language means growth. When we say that a boy or a girl has grown up, it means that she has grown up. The word adolescent denotes the meaning of approaching or getting close to the dream. Thus, linguists confirm that he is the individual who is approaching the dream and the completion of maturity.(Mr., 1991, p. 272).

- Secondary stage: It is the period following childhood and between sexual maturity and adulthood, during which the individual is considered a boy or a girl, and there are basic changes and severe disturbances in all physical, mental, social and emotional development (Agha, 1997 p54).

1.4 Previous studies:

Study by Talal Najm and Ali Abdel Fattah (2009):

It was titled: The effect of physical education lessons on some functional variables, physical fitness elements, and body mass among second-year middle school students.

It aimed to know the effect of physical education lesson on some functional variables, as well as to know its effect on developing some elements of physical fitness (transitional speed, agility, endurance, explosive power of the legs) and indicators of aerobic and anaerobic capacity and body mass. The research sample consisted of 35 students, and the experimental method was used, and it was reached Researchers To the following:

- The lessons in physical education and sports class had seen an improvement in heart rate.

- There is an effect of physical education lessons on both aerobic and anaerobic capacity indicators and body mass.

- There is an effect of physical education lessons on a number of elements of physical fitness (transitional speed, agility, endurance, explosive strength of the legs)..

/ Study of Bakhtawi et al. (2019):

Under the title: Exploratory factor analysis of health-related physical fitness elements among middle school girls in western Algeria.

The study aimed to extract the latent factors of the elements of physical fitness related to health among middle school students and to reach a test battery that is specific and suitable for the Algerian environment by introducing (11) tests for factor analysis. The researchers used the descriptive approach with the survey method, on a sample selected randomly, which included (204) middle school girls (12-15) years old. The results concluded with three factors that the researchers interpreted and named according to specific conditions. The researchers also recommended the necessity of relying on the proposed battery to evaluate the elements of physical fitness related to health in light of the extracted criteria, whose units represent the highest saturations on the factors (Bakhtawi, 2019).

2. Research methodology:

In our study, we used the descriptive survey method because it is suitable for the study problem, which depends on studying the phenomenon as it is in reality.

2.1 Research areas:

2.2.1 Spatial Domain

Health-related fitness tests and measurements were conducted in secondary school yards designated for physical education and sports.

2.2.2 Time domain

It was completed procedure an experience Survey Initial from 01-05-2024 to June 2024. This is in order to know the level of physical fitness related to health in some states of the country (Algeria).

2.2.3 Human Domain

The human field consisted of all female students (adolescents) in secondary schools in some states of the country. In our study, we chose some states in the east, west, north and south.

2.2.3.1 Study sample

The study sample consisted of (3814) teenage female students in secondary school in some states of Algeria. They were randomly selected using the random sample method, with an average age of (16 years).

2.3 Study data collection:

Due to the large size of the sample under study, a group of physical education professors and some other assistants with academic specialization in the field of physical education and master's students were consulted. They were met and the data collection mechanism and methods were presented, the tests that will be applied, and everything related to the data monitoring and tabulation mechanism. After obtaining the relevant approvals from the responsible authorities, it was agreed with the assistants on the necessity of conducting all measurements and tests, whether measurements or tests related to physical fitness related to health, within the scientific standards and principles specified for them by the researcher. The assistants were provided with the forms for tabulating and monitoring the data in prior coordination with the student researcher.

Table 3. It shows the distribution of the research sample members according to regions and states.

Test	State	number
North	Algeria	260
	The city	214
	The M'Sila	205
	The shelf	120
South	Laghouat	620
	Biskra	90
	Djelfa	300
	Ouargla	155
	Ghardaia	260
	Adrar	102
West	Oran	240
	Mostaganem	200
	Tlemcen	240
	Tiaret	180
	Mother of the rest	180
the East	Constantine	120
	Setif	188
	Batna	140
the total		3814

The total research sample, consisting of 3,814 individuals, was distributed across four main geographical regions covering several Algerian provinces. The South region recorded the largest share with 1,327 individuals, distributed among the provinces of Laghouat (620), Djelfa (300), Ghardaia (260), Ouargla (155), Adrar (102), and Biskra (90). This was followed by the West region, which included 860 individuals from Oran and Tlemcen (240 each), Mostaganem (200), and Tiaret (180). The North region comprised a total of 799 individuals, covering the provinces of Algiers (260), Medea (214), M'Sila (205), and Chlef (120). Finally, the East region represented 628 individuals of the study sample, distributed across Setif (188), Oum El Bouaghi (180), Batna (140), and Constantine (120)

2.4 Search tools:

2.4.1 Physical tests and measurements:

–First test: Cooper's test for measuring respiratory endurancetest Cooper

–Second test: Arm push-up test

–The third test: sitting up from lying downSit-up:

–Test 4: Seated trunk flexion (flexion box):

–Test 5: Body Mass Index (BMI)BMI)

We used this test because it fits our study. The body mass index measures body composition by taking a person's weight and dividing it by the length of the square. For example: If a person's height is 1.82 meters, and the divisor of the calculation is (1.82 * 1.82) = 3.3124, then if the weight is 70.5 kg, the body mass index is 21.3.

2.5 Psychometric properties of tests:

2.5.1 Test validity:

Intrinsic Validity Coefficient = √Reliability Coefficient

To ensure the validity of the tests used, The student researcher finds the validity of the test used through self-validity.

2.5.2 Test reliability:

In order to ensure the stability of the test, the researcher calculated the stability coefficient using the test-re-administration method (**test–retest)**On a

number of the research community that were later excluded from the study sample, the researcher conducted the tests on20 female students on 12/04/2024, and the tests were re-administered to them on 12/11/2024, with all variables and conditions for the two tests adjusted. The following table shows the results of the two tests.

Table 3. It demonstrates the validity and reliability of the tests used.

Test	stability coefficient	Pearson's probability coefficient	Self-reliability coefficient
Cooper's test	0.91	0.000*	0.88
Arm press	0.97	0.000*	0.91
sitting up from lying down	0.94	0.000*	0.95
Flexibility	0.90	0.000*	0.98

From Table No., we notice that the probability of the Pearson test between the pre- and post-measurements for all tests of physical fitness elements related to health is 0.000 for each of them, which indicates the existence of a significant correlation between the pre- and post-measurements. We also notice that the value of the self-reliability coefficient ranges between 0.88 and 0.98, which are high values, and this means the validity and reliability of the tests used.

2.5.3 Objectivity:

The Cooper Air Research Institute battery tests are standardized tests, are simple and uncomplicated, and are scored on repetition, time, and distance.

2.6 Presentation of the survey results:

-Verifying the first hypothesis:There is a weakness in health-related physical fitness among adolescent girls in some states of Algeria.

Presentation of the results of the standard levels of cardiorespiratory fitness among adolescent female students aged 17-18 years in some Algerian states:

Table 3. It shows the results of the standard levels of cardiorespiratory fitness among teenage female students aged 17-18 years in some Algerian states.

	Very weak	weak	middle	good	excellent
Category	Less than 1700	[1700, 1799]	[1800, 2099]	[2100, 2300]	greater than 2300
number	300	1310	197	108	90
The ratio (%)	15	65.5	9.85	5.40	4.50

Through table No.03We note that the largest percentage of teenage female students are aged 17-18 years, which represents 65.50%.% of them have a performance within the range [1700, 1799], meaning that their level in the Cooper test is weak, while the lowest percentage, which represents 4.50%, achieved an excellent level in the Cooper test, and they are the students whose performance exceeded 2300 meters.

2.6.1 The level of adolescent female students in the trait of muscular strength(arm press)In some states of Algeria:

2.6.1.1 Presentation of the results of the standard levels of muscle strength trait among adolescent female students in some Algerian states:

Table 4. It shows the results of the standard levels of muscle strength among teenage female students in some Algerian states.

	Very weak	weak	acceptable	middle	good	excellent
Category	under 21	[30, 40]	[41, 43]	[44, 50]	[51, 54]	Over 55
number	366	2469	510	252	123	94
The ratio (%)	9.60	64.74	13.37	6.61	3.22	2.46

Through table No.04We note that the largest percentage of teenage female students, representing 64.74%,% of the students' performance falls within the

range [30, 40], meaning that their level in the push-up test with the arms is weak, while the lowest percentage, which represents 2.46%, achieved an excellent level in the push-up test, and they are the students whose performance exceeded 55.

2.6.1.2 The level of adolescent female students in the capacity to bear strength in some Algerian states:

2.6.2 Presentation of the results of the standard levels of the strength tolerance trait among adolescent female students in some Algerian states:

Table 5. It shows the results of the standard levels of the strength tolerance trait among adolescent female students in some Algerian states.

	Very weak	weak	middle	good	excellent
Category	Less than 22	[23, 34]	[35, 53]	[54, 60]	greater than 61
number	2341	871	562	35	05
The ratio (%)	61.38	22.84	14.74	0.92	0.13

Through table No.05We note that the largest percentage of teenage female students, representing 61.38%,% of the students whose performance score is less than 22 means that their level in the strength endurance test is very weak, while the smallest percentage, which represents 0.13%, achieved an excellent level in the strength endurance test, and they are the students whose performance exceeded 61.

2.6.3 The level of flexibility among adolescent female students in some Algerian states:

2.6.3.1 Presentation of the results of the standard levels of resilience among adolescent female students in some Algerian states:

Table 6. It shows the results of the standard levels of resilience among adolescent female students in some Algerian states.

	Very weak	weak	middle	good
Category	[03, 07]	[07, 12]	[12, 20]	[20, 24]
number	415	2669	422	195
The ratio (%)	10.88	69.98	11.06	5.11
	Very weak	weak	middle	good

Through table No.06We note that the largest percentage of teenage female students, representing 69.98%,% of the students' performance scores ranged between 07 and 12, meaning that their level in the flexibility test was weak, while the lowest percentage, which represents 2.99%, achieved an excellent level in the flexibility test, and they are the students whose performance exceeded 24 points.

3. DiscussionAnd interpret the results

discussionThe first hypothesis:Cardiorespiratory fitness level of adolescent female students

Through the results obtained in Tables No. (03It was found that the arithmetic averages of cardiorespiratory fitness among teenage female students were at a weak level compared to the standards. This is due to the fact that female students in secondary school are not enthusiastic and not active, which is what most of the previous studies we have discussed agreed upon, which confirm that female students have a higher percentage of physical inactivity.

This result may also be due to the lack of sufficient experience and scientific qualifications among some physical education teachers at this stage to help them develop cardiorespiratory fitness.

Cardiorespiratory fitness is an objective physiological measure that describes the ability of an individual's circulatory and respiratory systems to transport and utilize oxygen to active skeletal muscle during exercise. Importantly, it is an integrative measure influenced by multiple factors including physical activity habits, obesity, genetics, and traditional risk factors. Over the past four decades.

Several studies have shown a positive and moderate effect of cardiorespiratory fitness on adverse factors such as disease, major adverse cardiac events, and mortality (J.ChuMD, 2021p 67-75). In addition, the World Health Organization recommends that adolescents perform at least 60 minutes of daily physical activity at moderate to vigorous intensity (Machado, & al, 2021, pp. 205-211).) Also, in our study on the sample that we conducted at the level of some of the country's states, we saw that the female students in the northern region were higher than the eastern, western and southern regions, as shown in Appendix No. (02), while the results were generally at a weak level. The results of the study agreed with the study (Al-Omari, 2013). And also study (Al-Harbi., 2012).

As for the level of muscle strengthAdopt through table No. (04) The level of muscle strength represented by the arm push-up test is that the largest percentage of teenage female students, which represents 64.74% Their performance falls within the range [30, 40] according to the criteria, meaning that their level in the muscle strength test is weak. This is due to the lack of strength exercises during physical education class, and some teachers do not care about this element. The results of our study are consistent with the study (yung Lo, 2017) entitled: The relationship of school environment and after-school physical activity with health-related physical fitness among junior high school students in Taiwan, where girls in all schools performed the worst in muscle strength and muscle endurance.

Regarding the level of (strength) muscular enduranceThe results are shown in Table No. (05) The arithmetic means of the sit-up test were the largest percentage of teenage female students, which represented 61.38% of their performance score is less than 22, meaning that their level in the strength endurance test is very weak. Also, the northern states have a higher level than the southern, eastern and western states, and this is due to female students in the northern region joining sports clubs.More than other areas, which helps increase endurance, as most of them follow a healthy diet and nutrition system. In addition, some of them practice various sports that are characterized by repetition and continuity in performance, unlike other areas. Research has shown results that show a low level of muscle endurance. The researcher attributes the reason for this to the lack of practice of the necessary exercises to develop this element in physical education classes and the focus on team games, basketball, handball, volleyball and lack of interest in developing muscle endurance. He confirms:Donatello-Rebeca)Regular physical activity has a positive effect on the muscles, leading to renewed oxidation activity and an increase in glycogen reserves in the muscles.

As for the level of flexibility We may notice that the largest percentage of teenage female students, which represents 69.98%,% of their performance scores

range between 07 and 12, meaning that their level in the flexibility test is weak, as shown in Table No. (06When comparing the results with the standards, note thatResearchers A decrease in the level of flexibility among adolescents in this secondary stage. The researcher believes that the reason for this may be due to the lack of practice of flexibility exercises, especially in the lower age groups (intermediate and primary). In addition, the physical education curriculum in secondary school is limited to one physical education class, which is not enough. Also, focusing on one type of sports activity, which is basketball, and neglecting flexibility-related activities and exercises leads to a decrease in flexibility. The researcher also noted that the reason for the decrease is due to the lack of interest of teachers in improving this physical trait, as repetition of stretching exercises for muscles and ligaments contributes to and leads to improvement and contributes to their development. The researcher also believes that the lack of interest in flexibility exercises at an early age among adolescents leads to the lack of development and progress of this trait, which negatively affects the element of flexibility among adolescents.

As the researcher sees ityenLimiting the physical education curriculum to one class per week is not enough, and the lack of physical activity for females in daily life does not contribute to improving the development of health-related physical fitness among teenage girls in high school, in addition to the lack of interest and focus on health fitness by students, teachers and parents, as there is a lack of awareness of healthy sports. The researcher believes that the reason for this is due to the lack of reliance on healthy food and the focus on ready-made foods, especially fast food, and staying away from movement, in addition to the lack of exercise. (Zahi Ibrahim and Walid Al-Mardini) added that working on developing physical readiness and capabilities and raising the level of physical fitness should be one of the important matters that occupy the individual these days, as physical fitness is considered one of the main factors that help the individual to practice professional work efficiently and successfully, and it also helps individuals to practice games efficiently and energetically, whether at the skill or physical level, and the technological development of the modern city has an impact on all aspects of life (Ibrahim Zahi, 2020 p 3)

Therefore, we conclude from the above that the results obtained among adolescent girls in Algerian high schools were weak and that they suffer from a level of physical fitness related to health.

As a general summary of what has been explained in this hypothesis, it can be said that the validity of the proposed assumption has been confirmed.

5. references:

Agha. (1997). *Educational Research: Its Elements, Methods, and Tools* . Gaza: Miqdad Press.

Al-Harbi., M. b. (2012). The level of physical fitness related to health and physical activity among students (12-15 years) in Riyadh. King Saud University . *Journal: Educational Sciences and Islamic Studies*, . 569-584.

Al-Hasanat., I. (2009). Sports Health Science . *Amman, Jordan: Osama Publishing House.*

Al-Omari, D. (2013). *Evaluation of health-related physical fitness elements among secondary school students aged 16-19 years, males, using a computer program.* . Algeria.

Bakhtawi, A.-H. M. (2019). *Exploratory factor analysis of health-related physical fitness elements among middle school students in western Alger.* Alger.

Bull, F. C. (2020). *Physical Activity Unit, Department of Health Promotion, World Health Organization, Geneva, Switzerland School of Human Sciences, The University of Western Australia, Perth, .* Australia: Western Australia, .

d, S. (2020). Health-related physical fitness indicators and clustered cardiometabolic risk factors in adolescents: A longitudinal study,. . *Journal of Exercise Science & Fitness* , 162-167.

Danie, l. M. (2012). Relationship between physical self-concept and health-related. Relationship between physical self-concept and health-related. . *International Conference on Education and Educational Psychology* (pp. . 659 – 668). Spain : University of Granada.

Diego Augusto Santos, S. &. (2017). Impact of physical growth, body adiposity and lifestyle on muscular strength and cardiorespiratory fitness of adolescents. *Journal of Bodywork and Movement Therapies*.

Ibrahim Zahi, a. W.-M. (2020). Elements of health-related physical fitness among primary school students in Irbid schools. An-Najah University . *Journal for Humanities Research*.

J.ChuMD, D. (2021). Prognostic Value of Cardiorespiratory Fitness in Patients with Chronic Kidney Disease: The FIT (Henry Ford Exercise Testing). *The American Journal of Medicine, .*

Khaled, M. (2019). Determining the standard levels of health-related fitness elements in middle-school students. *Scientific Journal of Science and Technology for Physical and Sports Activities*, .220-234. Récupéré sur https://www.asjp.ce

Lo, K.-Y. (2017). Association of School Environment and After-School Physical Activity with Health-Related Physical Fitness among Junior High School Students in Taiwan. *International Journal of Environmental Research and Public Health, .*

Machado, A. (2021). *Daily physical activity, cardiorespiratory fitness, nutritional status, endothelial function, and autonomic modulation in school-age adolescents: A principal component analysis. Obesity Research & Clinical Practice, 3.*

Ortega, F. B. (2008). *(PROmoting FITness and Health through physical activity) research group, Department of Physical Education and Sports, Faculty of Sport Sciences, Research Institute of Sport and Health, .* Spain: University of Granada.

s, E. (2019). , S. (Muscular fitness and cardiorespiratory fitness are associated with health-related quality of life: Results from labmed physical activity study . *Journal of Exercise Science & Fitness* .