International Journal of Physiology, Sports and Physical Education
Online ISSN: 2664-7729; Print ISSN: 2664-7710
Received: 04-11-2019; Accepted: 06-12-2019; Published: 13-12-2019
www.physicaleducationjournal.net
Volume 1; Issue 2; 2019; Page No. 10-18

The level of physical activity among a sample of Algerian youth

Cheikh Yaaqoub[1], Benmostefa Ismail[2], Ouhassine Ibrahim[3], Zenagui Sefiane[4], Derbal Fethi[5]
[1-2-3-4-5] Université des Sciences et de la Technologie d'Oran Mohamed Boudiaf, USTO-MB, BP, El M'naouer, Oran, Algérie

DOI: https://doi.org/10.33545/26647710.2019.v1.i2a.10

Abstract
Our aim was to find out the level of energy spent as well as the duration of physical activity per week, and the levels of body mass index of Algerian youth (n = 1350), aged between 18 and 36 years, the number of males 816, the number of females was 534, and we compared male and female.We used a questionnaire dedicated to measuring the level of physical activity, which was distributed in paper, and electronically to the members of the sample, and after the compilation of the answers we statistical treatment using spss v22. The results showed that the level of energy spent per week is weak in all years z-score < 1.96 except at age 23 (z-score = 2.67), When compared between males and females, the difference was statistically significant in favor of males ($p \leq 0.05$), in the years 18 to 27 and 33, the remaining years were not statistically significant differences ($p > 0.05$). The duration of physical activity per week from age of 18 to 23 had a high physical activity level z-score ≥ 1.96, other years were low, and when comparing both sexes, there were statistically significant differences in favor of males in the years 22, 23 and 25, while the difference was in favor of females in the age of 30, and the other years did not have differences between them.

Keywords: physical activity, non communicable diseases, energy spent per week, duration of physical activity per week, body mass index

1. Introduction

In recent years, the world has witnessed an urban development that has been closely linked to the increasing dependence on machinery and technology throughout most of the day. This has negatively affected the level of physical activity (PA) of the people. PA is defined as every human movement and requires energy expenditure, expressed in equivalence Metabolic (Met) as any activity requiring 1.5 (Met) or more, and be home work or walking or jogging or riding a bike. The world currently suffers from the problem of low level of PA, where physical inactivity was described as a global epidemic, with a prevalence in the world is 35% and the number of deaths because of it is greater than the number of deaths due to smoking (Wen & Wu, 2012 [46]; Hallal, *et al*., 2012) [17], 1 in 4 adults in the world and 3 in 4 adolescents between the ages of 11 and 17 do not meet the global recommendations on PA identified by the World Health Organization (WHO) (WHO, 2018) [50], one study confirmed that the recommendations require that primary risk factors be investigated at age 20, including the question of PA at each medical visit (Pearson, Blair, Eckel, & *et al*, 2002) [33], it is known to be at least 150 min of mild PA or 75 min high intensity per week (WHO, 2010) [49], in the Arab countries, in the past four decades there has been a dramatic change in the lifestyle of young people, with unhealthy food becoming increasingly available and the time spent in physical inactivity such as television, computer and Internet (Mehio, *et al*., 2010 [28]; Abdullah-Skhiri, Traissac, Elali, & *et al*, 2011[2]; Zaghtoul [51], Ali, & *et al*, 2011) [51], Arab countries in general do not have a high level of PA (Mathers, Stevens, & Mascarenhas, 2009)**,** this results confirmed by a recent study that found that the level of physical inactivity among adolescents and Arab adults is high (Eman, Chaza, Hala, & Carla, 2018) [14], and there is no doubt that physical inactivity is a major harm to health, where it leads to weight gain, high pressure, and all the factors that contribute to the occurrence of cardiovascular disease, diabetes and cancers (Abdulkarim, 2017) [1], PA was described as necessary to protect against the risk of obesity and related health problems such as type 2 diabetes, cardiovascular disease and bone health problems (Hills, 1995 [20]; Hiils, Street, Soam, & *et al*, 2013) [19], In addition, reducing physical inactivity would reduce between 6% to 10% of noncommunicable diseases and increase life expectancy (Lee, Shiroma, Lobelo, & *et al*, 2012) [26], a 30-year follow-up study of those who had impaired glucose tolerance after dieting and physical exercise had delayed the onset of diabetes and reduced cardiovascular disease, mortality of heart disease decreased, and the average age increased by 1.44 years (Qiuhong, Ping, Jinping, & *et al*, 2019) [35], according to the WHO, more than 60% of diseases, disabilities and deaths in Arab countries are caused by cardiovascular disease, diabetes and cancer (WHO, 2011), As is known, PA plays an important role in the prevention of these diseases, another study confirmed that obesity has reached epidemic proportions in Arab countries in children and adults (Musaiger, AL-Mannai, Tayyme, & *et al*, 2012) [31]. Algeria is an Arab country and is the largest country in Africa. It is located in the north and overlooks the Mediterranean Sea, It has a population of over 40 million, and like other Arab countries it has witnessed a great growth in recent years, which has negatively affected the lifestyle of the population, according to WHO estimates, no communicable diseases represent 63% of all deaths in 2010 in Algeria (WHO, 2012) [47], and diabetes type 2 is the fourth most common non-communicable disease in Algeria (Boudiba

& Mimouni, 2011) [9], a study of Algeria showed that 14.3% of those aged ≥ 25 years were suffering from high cholesterol, 36.2% had hypertension, 10.6% were aged ≥ 20 years with diabetes, and 17.4% suffer from metabolic syndrome, the proportion of those who have BMI ≥ 30, 19.1% (Mehio, *et al*., 2010) [51]. There is no detailed information about males and females in Algeria, although it is important to measure the level of PA to avoid the diseases mentioned earlier, we did not find any study in Algeria measured or observed the reality of PA, and we do not know much about its levels, which we seek to know in this research, which may be useful in drawing attention to this reality, and from it may avoid many of the health and economic damage.

2. Methods

After meeting with the research team, and after consultations with the specialized doctors on the method we use to measure the level of physical activity, we adopted a special questionnaire (Al-Hazzaa & Al-Ahmadi, 2003) [5], a quantity of it has been printed, we have prepared another part electronically, and after the division of tasks, some three members distributed it in paper, others sent it electronically, this questionnaire is considered more accurate than ipaq, and it is characterized by high reliability and reliability, where we can measure the energy spent per week through the metabolic equivalent and this based on special tables(Barbara, Ainsworth, William, & *et al*, 2000). We estimate the energy spent by a special equation, we can also measure the duration of physical activity, and we used the descriptive method on a sample of 1350 (males = 816, females = 534), aged between 18-36 years, we have detailed the characteristics of the search sample in the tables displaying the results.

3. Results

After the questionnaires were returned to us, we started the statistical treatment, where we used spss v 22, and measured the mean and standard deviations as well as applied the test Student in the comparison between males and females, z-score, percentage.

Results of comparison and z-score

a. Energy spent per week

Table 01 shows that males between the ages of 18 and 23 spend ≥ ***1050*** kcal/w, these years have the largest average spending of 1464,27 kcal/w at the age of 22, after that the decrease is below the recommended mean at the ages of 24 and 25, then the arithmetic mean then becomes ≥ 1050 kcal/w until the age of 26, then the age of 27 is a significant decrease, the mean at that age is 761.18 kcal/w, from this age up to 36 years old the average weekly energy expenditure was very weak, ranging from 305,87 kcal/w at age 33 which is the smallest value and 761,18 kcal/w at the age of 27, the highest average energy expenditure for males is at the age of 22, the lowest average at the age of 33, and the age of 27 is the largest decline. Females were all below the recommended rate, they had the highest average of 89, 95 kcal/w at the age of 18, while the smallest average was 33 at 192, 27 kcal/w, they shared with males the age at which the greatest decline occurred. When comparing males and females, the differences were statistically significant in favor of males (p≤0, 05) in the years 18 through 27 and 33. The remaining years were not statistically significant, and no comparison was made at age 36 because each The sample was all male, meaning that by the age of 28 both sexes share the average energy spent per week, and the age of 25 - for both sexes - is the largest drop. We show the results of z-score, from the ages of 18 to 22 and 26 were |z-score| < 1,96, meaning that the difference is not statistically significant, which indicates that the level of physical activity was low in these years, while the years 24 and 25 and the age of 27 to 35 except the age of 34 was |z-score| ≥ 1,96, but negative means that the difference is statistically significant but in favor of the reference value (1050 kcal), this means that young people at this stage are very inactive, while the age of 23 was z-score =2,67, meaning that the difference statistically significant in favor of respondents at this age. It should be noted that at the age of 34 and 36 we used t-test, because the sample size was less than 30. Table 02 shows that the difference was statistically significant in favor of the larger arithmetic mean, the difference statistically significant in favor of the recommended rate, it means that in these two years the average energy expenditure per week, and the above results lead us to conclude that young people spend little energy except at age 23.

b. BMI

The results show that the BMI for males ranged from 21,03 to 28,62, where the minimum age was 18, the age of 34 had the largest value, and we note that from the ages of 18 to 27; 30 and 33 was the level of BMI for them within the recommended rates, while in the remaining years was between 25-30. For females, their BMI ranged from 21.65 at age 19 to 27.19 at age 33, and the mean were among the recommended rates in all years except 27; 29; 33 and 35 ranged from 25-30. When comparing both sexes, the differences were not statistically significant in all years, except for age 32; 33 and 34 ($p < 0.05$), where the difference was in favor of males aged 32 and 34, was in favor of females at age 33.

c. Duration of PA/w

Table 01 shows that the largest male was 19 years old it is 271, 62 min/w, the lowest average age of 33 is 55.72 d / a, while at the age of 27 was the largest decline, and from this age until the age of 36 was the arithmetic average duration of physical activity per week < 150 min/w, other years was the average DPA weekly ≥ 150 min/w. For females the largest average age was 18, it is 232.59 min/w, the smallest average at age 33 is 49.41 min/w, the largest decrease is at the age of 25, we also note that from the age of 18 to 21 and also at the age of 26 is the mean ≥ 150 min/w, while the other years the mean was < 150 min/w, except the age of 36 because there are no females. When comparing both sexes, there were statistically significant differences in favor of males in years 22, 23 and 25, while the difference was in favor of females at the age of 30, while the other years did not have differences between them. The results from z-score show that young people aged 18 to 23 had a high level of physical activity z-score ≥ 1,96, and from age 24 to 26 and 31 and 32, the difference was not significant, and from 27 to 30 and 33 and 35 were |z-score| ≥ 1,96, but the values were negative, which

means that the difference significant, in favor of the largest arithmetic mean and the largest average in this case is the reference value, and when we return to table 02, note that at the ages of 34 and 36 was $p < 0.05$, that is, the difference significant, but in favor of the reference value is 150 min/w; we used the t-test for one sample because $n \leq 30$. The above results lead us to conclude that young people between the ages of 18 and 23 have a high level of weekly physical activity, falling from age 24 to 36.

Percentage results

a. Male results

As shown in table 03, the largest proportion of those who spend energy ≥ 1050 kcal/w, was at the age of 22 which is 71,43%, the smallest percentage was in the years 33 and 34, which is 00%, the age at which the largest percentage in 27. From 19 to 23 years old, the percentage of those who spent energy ≥ 1050 kcal/w exceeded 50%, while other years all percentages were < 50%. The DPA in the week was the highest percentage of those who exceeded 150 min/w, at the age of 22, which is 75,51%, while the lowest was at the age of 33 and 34, which is 00%, we also note that at the age of 27 the greatest decline occurred. From the age of 18 to 26 percentages exceeded 50%, while the other years were the proportions of those whose DPA ≥ 150 min/w less than 50%. With regard to BMI, we note that in the years 18; 19 and 26 the lowest percentage of those whose index was ≥ 30 which is 00%, the highest percentage was 27,78% at the age of 36, the lowest percentage of those whose index between 25-30 is 8.2% at the age of 18, the highest percentage was at 34 years old which is 76,92%, the lowest percentage of those whose index was between 18,5 and 25 is 7,7% at the age of 34, the highest rate was at the age of 23 which is 77,36%, the highest percentage of those who were their index ≤ 18,5 is 24,59% at 18 years old, while the lowest was 21, 23, 24, 26 to 29 and 31 to 36 years old and amounted to 00%.

b. Female Results

Table 03 shows that the highest percentage of those who spend ***1050*** kcal/w is 32, 14% at the age of 18, while the lowest was at 28; 32 and 33 to 35 years which is 00%, age 36 is excluded because the sample at that age consists only of males. The highest percentage of women who exceeded 150 min/w period of physical activity per week was 71,19% and was at the age of 19, while in the years 33 and 34, the lowest percentage was 00%, while we note that between the ages of 18 to 21 and the age of 26 was ≥ 50%, the other years were < 50%. As for the BMI, we find that the lowest percentage of those whose index was ≥ 30 was in the years 19 to 21 as well as the years 23; 28; 30; 33 and 34 is 00%, the highest percentage was 30% at the age of 27, and those whose index was between 25-30, the lowest percentage was 6,67% at age 30, the highest percentage was 83.33% at the age of 33, while the highest percentage was between 18.5 and 25 at the age of 30 which is 93,33%, the lowest percentage was 8,33% at 33 years old, while the index was < 18,5; the lowest was at 21 to 23 years old, as well as 25; 29; 30;34 and 35 which is 00%, and the highest percentage was at the age of 18, which is 13,57%, and they share with males the age at which the highest proportion occurred.

c. Results of both sexes (males and females)

The results of the percentages of those who spend a weekly energy ≥ 1050 kcal show that the largest proportion was at the age of 23 which is 52,59%, the lowest rate is 00% in the years 33 and 34. The age at which the greatest decline occurred is 27 years old, we also note that only in the years 22 and 23 the percentage ≥ 50%.

The highest percentage of those who were physically active in the week ≥ 150 min/w, is 69, 15% and was at the age of 19, the lowest percentage is 00% in the years 33 and 34, and we also note that between the ages of 18 to 24 and 26 was the proportion of those who exceeded 150 min/w of $DPA \geq \mathbf{50\%}$, other years the percentages were < 50%.

As for the BMI, we find that the lowest percentage of those whose index was ≥ 30 was at the age of 19, which is 00%, the highest percentage was at the age of 36 which is 27,78%, the lowest percentage of those whose index was between 25 and 30, was 11.44% at the age of 18 years old, the highest percentage was 75% at the age of 34, and the highest percentage of those whose index ranged between 18,5 and 25 is 79,69% at the age of 18, while the age of 34 saw the lowest percentage which is 15,91%, we also note that from 18 to 28 years old and also the age of 30 to 32 percentages were ≥ 50%, in the other years percentage was < 50%, while those whose index was ≤ 18 found that the lowest percentage was 00% in the years 21; 23; 29; 31; 33 to 36 years old, while the highest percentage was at the age of 18, which is 16,42%.

Table 1: shows the results of the arithmetic averages of energy spent per week, body mass index and duration of weekly physical activity and the results of comparison between males and females and the results of z-score.

Age	n			mean±sd Kcl[a]			mean±sd BMI			mean±sd DPA[b]			P value[c]			z-score Kcl[d]	z-score DPA[d]
	male	female	Σ	male	female	Total	male	female	Total	male	female	Total	Kcl	BMI	DPA		
18	61	140	201	1106,13±762,64	891,95±726,53	968,56±728,58	21,03±3,09	22,02±3,3	21,72±3,26	243,88±180,05	232,59±193,48	236,02±189,12	0,036	0,120	0,433	-1,58	6,44
19	35	59	94	1357,05±847,41	856,79±514,93	1043,06±697,86	21,5±3,02	21,65±2,82	21,60±2,88	271,62±201,95	222,66±143,06	240,89±168,05	0,009	0,628	0,352	-0,09	5,24
20	39	24	63	1277,96±756,02	865,4±657,25	1120,79±742,53	23±3,72	22,66±2,32	22,87±3,24	245,05±171,61	191,75±125,74	224,74±156,83	0,033	0,966	0,325	0,75	3,78
21	38	26	64	1143,16±823,26	659,94±475,73	946,85±738,29	23,64±3,23	22,25±2,86	23,08±3,13	205,63±180,98	172,8±109,92	193,28±154,73	0,026	0,061	0,827	-1,11	2,23
22	49	28	77	1464,27±678,45	606,61±388,66	1152,39±718,91	22,86±3,48	23,46±3,45	23,08±3,46	234,06±116,11	143,46±96,61	201,11±117,28	0,000	0,543	0,001	1,24	3,82
23	106	29	135	1412,49±722,82	529,31±319,08	1222,77±750,48	23,41±3,06	23,52±3,21	23,44±3,08	230,90±134,23	129,82±82,09	209,19±131,39	0,000	0,970	0,000	2,67	5,23
24	61	28	89	1035,91±787,43	548,77±402,68	882,65±724,06	23,90±3,99	22,76±3,36	23,54±3,82	160,98±110,83	144,21±106,44	155,70±109,15	0,009	0,221	0,530	-2,17	0,49
25	56	29	85	1033,72±782,64	380,08±284,70	810,72±724,74	23,93±3,48	23,31±3,16	23,71±3,37	160,67±111,98	104,68±70,62	141,57±102,89	0,000	0,636	0,049	-3,04	-0,75
26	48	24	72	1125,24±708,79	578,57±330,83	943,02±659,82	24,23±2,31	23,13±3,37	23,86±2,74	178,47±107,31	150,29±87,25	169,08±101,33	0,001	0,056	0,367	-1,37	1,59
27	52	30	82	761,18±673,64	435,33±380,99	641,96±602,18	24,96±2,84	25,83±6,08	25,28±4,3	123,38±94,75	107,96±88,14	117,74±92,14	0,042	0,780	0,394	-6,13	-3,16
28	76	16	92	727,33±557,33	408,56±258,77	671,89±530,85	25,01±3,69	24,93±3,49	24,99±3,63	120,75±92,06	95,06±52,52	116,28±86,81	0,174	0,658	0,797	-6,83	-3,72
29	31	12	43	659,83±550,09	431,07±444,15	595,99±527,81	25,69±4,33	26,49±3,55	25,91±4,10	127,25±99,28	88,25±69,05	116,37±92,75	0,159	0,279	0,357	-5,63	-2,37
30	30	15	45	478,28±507,05	381,74±206,88	446,10±430,34	24,43±4,49	22,77±2,13	23,87±3,92	83,33±81,02	104,4±51,74	90,35±72,65	0,664	0,219	0,047	-9,4	-5,49
31	19	18	37	675,14±605,94	603,56±565,45	654,63±581,1	25,44±4,78	24,44±5,58	24,26±2,48	129,94±108,53	134±86,56	133,5±98,01	0,855	0,563*	0,819	-4,08	-1,01
32	28	13	41	630,12±542,93	387,71±190,14	553,26±472,08	25,48±3,81	23,62±5,14	24,89±4,30	133,6±123,13	94,23±36,59	121,12±104,78	0,384	0,037	0,789	-6,73	-1,76
33	25	12	37	305,87±262,81	192,27±131,85	269,02±232,94	24,55±3,14	27,19±3,26	25,40±3,37	55,72±33,99	49,41±35,21	53,67±34,03	0,037	0,013	0,388	-20,83	-17,2
34	13	9	22	345,27±179,72	274,5±84,91	316,32±149,90	28,68±4,52	24,79±3,13	27,09±4,39	82,15±25,69	74,88±13,55	79,18±21,46	0,225	0,012	0,44**	-	-
35	31	22	53	511,12± 341,69	359,52± 186,60	448,20±295,14	25,52± 3,72	27,15± 3,47	26,20±3,67	89,12± 70,93	65,04± 47,95	79,13±63,05	0,164	0,077	0,279	-14,84	-8,18
36	18	00	18	-	-	537,32±350,10	-	-	28,16±3,87	-	-	90,83±39,39	-	-	-	-	-

a: Kcal spent per week. b: DPA: Duration of physical activity (min) per week. c: Mann-Whitney test was used. d: z-score for total. *: The t-test was used because BMI results did not follow normal distribution, α=0.05. **: The t-test was used because DPA results did not follow normal distribution, α=0.05

Table 2: shows the results of comparing the BMI and DPA averages with the reference average in years 34 and 36.

Age	n	mean±sd Kcl per week	mean±sd DPA* per week	Kcl[a]		DPA[b]	
				t	sig	t	sig
34	22	316,32±149,90	79,18±21,46	-22,95	0,000	-15,47	0,000
36	18	537,32±350,10	90,83±39,39	-6,21	0.000	-6,37	0,000

α = 0.05.

a: Reference value = 1050 Kcal.

b: Reference value = 150 min.

Table 3: shows the results of the percentage of males and females and both in the energy spent per week and the duration of physical activity per week and body mass index

Age	n			Percentage																							
				Kcl*						DPA**						BMI											
				% >1050 Kcl			% < 1050 Kcl			% > 150 min			% < 150 min			% > 30			% (25-30)			% (18.5-25)			% < 18.5		
	male	female	Σ	male	female	Total	male	female	Total	male	female	Total	male	female	Total	male	female	Total	male	female	Total	male	female	Total	male	female	Total
18	61	140	201	44,26%	32,14%	35,82 %	55,74%	67,85%	64,18%	57,37%	56,43%	56,72%	42,63%	43,57%	43,28%	00%	0,71%	0,5%	8,2%	12,86%	11,44%	67,21%	72,86%	71,64%	24,59%	13,57%	16,42%
19	35	59	94	62,86%	30,51%	42,55%	37,14%	69,49%	57,45%	65,71%	71,19%	69,15%	34,29%	28,81%	30,85%	00%	00%	00%	17,14%	11,86%	13,83%	71,43%	81,36%	77,66%	11,43%	6,80%	8,51%
20	39	24	63	58,97%	29,17%	47,62%	41,03%	70,83%	52,38%	64,1%	58,33%	61,9%	35,9%	41,67%	30,1%	7,69%	00%	4,76%	29,07%	16,66%	20,63%	58,97%	79,17%	66,66%	10,26%	4,17%	7,95%
21	38	26	64	50%	23,08%	39,06%	50%	76,92%	60,94%	55,26%	50%	53,12%	44,74%	50%	46,88%	7,89%	00%	4,69%	18,42%	19,23%	15,62%	73,68%	80,77%	79,69%	00%	00%	00%
22	49	28	77	71,43%	17,86%	51,95%	28,57%	82,14%	48,05%	75,51%	42,86%	63,63%	24,49%	57,14%	36,36%	2,04%	7,14%	3,9%	22,45%	21,42%	22,08%	69,39%	71,43%	70,13%	6,12%	00%	3,89%
23	106	29	135	64,15%	6,90%	52,59%	35,85%	93,1%	47,41%	68,89%	31,03%	60,74%	31,11%	68,97%	39,26%	6,6%	00%	5,19%	16,04%	27,59%	18,52%	77,36%	72,41%	76,26%	00%	00%	00%
24	61	28	89	45,9%	14,28%	35,96%	54,1%	85,72%	64,04%	57,38%	42,86%	56,63%	42,62%	57,14%	43,37%	6,56%	3,57%	5,62%	21,31%	17,86%	20,22%	72,13%	67,86%	70,79%	00%	10,71%	3,37%
25	56	29	85	46,43%	3,45%	31,76%	53,57%	96,55%	68,24%	51,79%	27,59%	43,53%	48,21%	72,41%	56,47%	7,14%	3,45%	5,88%	25%	13,79%	21,18%	66,07%	82,86%	71,76%	1,78%	00%	1,18%
26	48	24	72	45,83%	8,33%	33,33%	54,17%	91,67%	66,66%	60,42%	54,17%	58,33%	39,58%	45,83%	41,67%	00%	8,33%	2,77%	41,67%	20,83%	34,72%	58,33%	62,5%	59,74%	00%	8,34%	2,77%
27	52	30	82	26,92%	10%	20,73%	73,08%	90%	79,27%	36,53%	20%	30,49%	63,47%	80%	69,51%	7,69%	30%	15,85%	40,38%	13,33%	30,49%	51,93%	50,01%	51,22%	00%	6,66%	2,44%
28	76	16	92	22,37%	00%	18,49%	77,63%	100%	81,51%	32,89%	25%	31,52%	67,14%	75%	68,48%	10,53%	00%	8,7%	32,89%	50%	35,87%	59,58%	43,75%	54,34%	00%	6,25%	1,09%
29	31	12	43	22,58%	16,67%	20,93%	77,42%	83,33%	79,07%	32,26%	16,67%	27,91%	67,74%	83,33%	72,09%	25%	9,68%	13,95%	33,33%	45,16%	41,86%	41,67%	45,16%	44,19%	00%	00%	00%
30	30	15	45	13,33%	00%	8,88%	86,67%	100%	91,12%	13,33%	20%	15,55%	86,67%	80%	84,45%	3,33%	00%	2,22%	36,66%	6,67%	26,66%	46,68%	93,33%	62,24%	13,33%	00%	8,88%
31	19	18	37	26,32%	16,66%	22,22%	73,68%	83,34%	77,78%	31,58%	38,89%	36,11%	68,42%	61,11%	63,89%	15,79%	16,67%	13,88%	42,1%	22,23%	30,55%	42,11%	55,54%	55,57%	00%	5,56%	00%
32	28	13	41	21,43%	00%	14,63%	78,57%	100%	85,37%	35,71%	7,69%	26,83%	64,29%	92,31%	73,17%	7,14%	15,38%	9,76%	46,43%	7,69%	31,71%	46,43%	69,24%	56,09%	00%	7,69%	2,44%
33	25	12	37	00%	00%	00%	100%	100%	100%	00%	00%	00%	100%	100%	100%	8%	00%	5,41%	36%	83,33%	51,35%	56%	8,33	40,54%	00%	8,34%	2,7%
34	13	9	22	00%	00%	00%	100%	100%	100%	00%	00%	00%	100%	100%	100%	15,38%	00%	9,09%	76,92%	55,55%	75%	7,7%	44,45%	15,91%	00%	00%	00%
35	31	22	53	9,68%	00%	5,66%	90,32%	100%	94,34%	16,13%	4,55%	11,32%	83,87%	95,45%	88,68%	16,13%	27,27%	20,75%	29,03%	45,45%	35,85%	54,84%	27,28%	43,04%	00%	00%	00%
36	18	00	18	-	-	11,11%	-	-	88,89%	-	-	5,55%	-	-	94,45%	-	-	27,78%	-	-	44,44%	-	-	27,78%	-	-	00%
Σ	816	534		40,19%	18,35%		59,81%	81,65%		47,43%	57,68%		52,57%	42,32%		6,62%	6,37%		27,81%	20,41%		61,64%	66,85%		3,8%	6,37%	

*: Kcl spent per week.

: Duration of physical activity (min) per week.

4. Discussion

The objective of this research was to determine the level of physical activity among Algerian youth (18-35) years, (n = 1350) males and females (males = 816, females = 534), by assessing the level of energy spent per week and duration of physical activity (DPA) Weekly, we also measured the BMI of the sample members, as we know, this is the first study of its kind in Algeria, which studied these variables on a sample of this size. The results showed that the sample had a low physical activity level, where only in 20, 22 and 23 years was the average energy expenditure per week ≥ 1050 kcal, the highest mean was 1222.77 Kcal, z-score = 2.67, which is greater than 1.96 (α = 0.05), it is the only value in which the difference was statistically significant for the sample, only at the age of 23 was the mean of energy spending per week is large, but this mean was not great to have health benefits, the health gains increase when the volume of energy spending is increased to 2000 kcal per week (Drygas, Kostka, Jegier, & Kunski, 2000) [13]. This means that there is a significant shortage of young people in the level of PA, it was the lowest average at the age of 33, which is 269.02 kcal which is a very low value that indicates that at this age young people will be in great physical inactivity, We attribute the reason for the relatively high level of physical activity in the early years 20, 22 and 23 to the nature of life in those years of age, most young people are in university, and the conditions of university in Algeria are tired, where young people become self-reliant in doing their needs unlike at home, as for the reason why the mean in the ages of 18 and 19 is below the average, we attribute it to the fact that most young people at this stage are in high school, and most high schools are very close to their places of residence, in addition to the large study hours of up to 8 hours, approximately 8 hours of seating per day, and there is no doubt that this has a significant impact on the low level of energy spent, this goes against the role of the school, it must be an encouraging environment to raise the level of PA, in Greece, special policies have been implemented in schools to reduce the increased prevalence of cardiovascular disease-related deaths (Bouziotas, *et al*., 2004) [10]**,** a Moroccan study reported that the level of physical activity among Moroccan adolescents is inadequate (Hamrani, Mehdad, El Kari, & *et al*, 2014) [18], which is consistent with what we have reached, we also notice a significant reduction in energy expenditure per week starting at the age of 27, we believe that the reason is that most young people engage in jobs, most of which do not encourage active life, also cause them fatigue and stress, and after the completion of the work cannot do PA, in addition, at this stage the majority is married, one study has suggested that marriage has a role in obesity (Rguibi & Belahsen, 2007) [36] **.**When we observe the results, we find that even in the first stages of youth (18-25 years) the results were weak, this will negatively affect adults because they originally lived the same unhealthy style, and here shows us the role of the school in the establishment of a culture in students encouraged by their desire to PA so as to benefit them in adolescence and reflected them positively in adulthood, studies have confirmed that the school is a suitable center for the formation of physically active youth (Gordon-Larsen, McMurray, & Popkin, 2000; Strong, *et al*., 2005) [38]**,** this means that if we have an active youth in school, this will reflect positively on them in adulthood, which was confirmed by follow-up studies where a study was conducted on a sample of 7794 males and females, and the aim was to know the relationship between participation in various sports in the stage of adulthood and PA in adulthood, after answering the questions, the researchers concluded that there was a positive relationship between participation in sports in childhood and the level of physical activity in adulthood (Tammelin, 2003) [39], this was supported by a follow-up study of 25 years (1976-2001) on a sample of 1525, they have concluded that participation in sports and physical activities will continue into adulthood (Houotari, Nupponen, Mikkelson, Laako, & Kinjala, 2011) [22], on the other hand, one study found that there was no relationship between physical activity participation in childhood and adulthood. This study was conducted on 127 in Japan (Hiroaki, *et al*., 2017), however, this sample may be unrepresentative of the overall community, and we also believe that cultural awareness has influenced these results. The results for the duration of weekly physical activity showed that from age 18 to 26, the mean of duration of activity was ≥ 150 min/week, and from age 27 to 36, the average was < 150 min/w, but the difference was statistically significant only from 18 to 23, z-score ≥ 1.96 (α = 0.05), this means that the average DPA may be ≥ 150 min/w but does not amount to statistical significance, these results confirm what we have achieved in the energy spent, where the older the age decreased PA level, it is also noted that the lowest average in physical activity duration was also at the age of 33, which is the same age as the lowest average energy spent weekly, that is, this age is very sensitive and must be taken care of as the age increases, the risk of noncommunicable diseases may increase from age 27, the studies have confirmed that physical inactivity develops with an increase in age (Trang, *et al*., 2013 [43]; Issad, Asmaa, Imane, & *et al*, 2018) [23], other research reported that there was a link between physical inactivity and blood pressure (Al-Nozha, *et al*., 2007 [7]; Al-Hamdan, Saeed, Kutbi, Choudhry, & Nooh, 2011 [4]; Al-Hamdan, Abdulmohsen, & Abdalla, 2012) [3]**,** if we asked each of the sample to tell us if he was suffering from a chronic disease was better, but the majority refused to answer, This is difficult for us to discussion, as for the BMI, it is clear to us that with age, there is an increase in it, but in the early years was within acceptable and healthy rates, and although this indicator is important to give an overview of obesity in the population however, it is inaccurate, we also relied on the BMI calculation on the sample's statement on their weights and lengths, We could not confirm the validity of measurements, but these results are reliable because when we observe the results, we find that the level of energy spent weekly and the duration of weekly physical activity are decreasing with the increase in age, while the body mass index rises with the increase in age, this proportionality we accept as evidence of the credibility of these results. When comparing males to females, females have the lowest level of energy spent per week, even in the early years, females had an average weekly energy expenditure of < 1050 kcal/w, they had the highest average age at 18 which is 891.95 Kcal/w, the difference was statistically significant in favor of males from aged 18 to 27 as well as age 33 ($p \leq 0.05$), whereas in other years the differences were not significant

between both sexes, when the percentages are observed, the lowest percentage of males whose mean was ≥ 1050 kcal/w is 00%, which is the same for females, the highest for males was 71.43%, for females 32.14% and the highest average for males was 1464.27 Kcal/w, and females had 891.95 Kcal/w, the mean for males is 305,87 Kcal/w, and females have 192,27 Kcal/w, which means that there is a very large gender team, for the duration of weekly physical activity, the difference was statistically significant in favor of males in years 22, 23 and 25, while it was statistically significant for females only at the age of 30 ($p \leq 0.05$), while in other years there were no statistically significant differences between both sexes, when returning to the percentages, we note that the highest percentage of males whose duration of physical activity weekly ≥ 150 min/w is 75.51%, females 71.19%, the lowest rate was 00% for both sexes, the highest mean for males was 271.62 min, Females had 232.59 min, the lowest average for males was 55.72 min, and females were estimated at 49.41 min, meaning that males were better than females but less than the difference in energy expenditure per week, meaning that females had a lower level of physical activity than the male, this is consistent with several studies that have confirmed that girls are less active than males (Trost, Pate, Sallis, & *et al*, 2002 [44]; Riddoch, Mattoks, Deere, & *et al*, 2007 [37]; Wang, Chen, & Zhuang, 2013) [45], we attribute these results to the fact that fewer opportunities exist for females due to habits, and studies have confirmed that social barriers in females prevent them from participating in physical activity (Tergerson & King, 2002 [42]; O'Dea, 2003 [32]; Bull, Pratt, Shephard, & Lankenau, 2006) [12], another study suggests that social and religious norms do not enable females to practice PA outdoors (Musaiger, 2011) [29], the majority do not have the financial means and time to join women's clubs. Even women's clubs are not widely available, this is confirmed by the results of a Bahraini study, where 67% of females reported that there is sexual discrimination of opportunities to participate in PA, where sports facilities are provided for men only, and 24% believe that the attitude and negative perception of women who exercise sports prevents them from practice (Musaiger & Al-Ansari, 1999) [30], while in BMI there were no significant differences except in the years 32, 33 and 34, where the BMI in males was greater in 32 and 34, while the female index was greater at the age of 33, and when you see the results of the percentages we find that the lowest percentage of those Their index was ≥ 30 is 00% for both sexes, while the largest proportion of males was 27.78%, females had 27.27%, the lowest percentage of males whose index was between 25 and 30 was 8.2%, and females were the highest proportion of males was 76.92%, and females reached 83.33%, the lowest percentage of males whose index was between 18.5 and 25 is 7.7%, females had 8.33%, The highest percentage of males was 77.38% The lowest average for males was 21.03, for females was 21.65, the highest average for males was 28.68 and for females 27, all these findings confirm that there are no significant differences between males and females in BMI, a recent study has confirmed that there are no differences between males and females in BMI (BOŻENA, Wojciech, & Glinkowski, 2018) [11], we believe that the reason for the lack of differences is the inaccuracy of this indicator. Although there are no differences, it is physiologically and anatomically known that females have more fat than males, but our BMI results do not show this, if we use the fat percentage test in body for the results were more accurate, although there are no differences, studies have confirmed that females are more likely to gain weight because they are affected by married life, pregnancy and frequent childbearing. (Garawi, Ploubidis, Devries, Al-Hamdan, & Uauy, 2015 [15]; Telama, 2009) [40]. In general, only 40.19% of the energy spent per week was ≥ 1050 kcal/w and 47.43% of their weekly physical activity was ≥ 150 min/w, which is very low, this means that of every 10 males, 6 of them spend energy < 1050 kcal/w, and 5 out of 10 of their physical activity time ≥ 150 min/w, while females find that only 18.35% of their energy expenditure per week ≥ 1050 kcal / a, 57 68% of the duration of their physical activity per week was ≥ 150 d / a, meaning that the level of female physical activity is very low especially in the energy spent per week, this means that out of 10 girls 8 of them spend energy < 1050 kcal / week, and the duration of weekly physical activity even if exceeded 50%, it remains weak and insufficient, and also note that 34.43% of males had a BMI ≥ 25 (6.62% ≥ 30, 27.81% between 25 and 30), and 61.64% had an index between 18.5 and 25, while females accounted for 26.78% exceeding the index 25 (6.37% ≥ 30, 20.41% between 25 and 30), 66.85% between 18.5 and 25. When returning to similar studies, an Omani study found that 40% of males and less than 30% Of females meet recommendations for 60 min daily of physical activity (Telama & Yang, 2000), these percentages are similar to our findings, especially among males, but in the study we mentioned they adopted the 60 min standard of daily PA, and we adopted the 30 min standard of physical activity per day, another study reported that 80.4% of males and 84.1% of females Physically inactive (Karl & Supa, 2016), those ratios are high, similar to what we found especially in females, and overall both sexes were physically inactive, one study reported that the majority of men and women did not reach the recommended levels of PA to promote health (Al-Nozha, *et al*., 2007) [7] however, there is difficulty in comparing our results with those of other studies, This is because of the different size of the sample and the matriels used to collect the data as well as the different environment, Arab countries are characterized by a high temperature, which makes it difficult to practice PA in the open air (Eman, Chaza, Hala, & Carla, 2018) [14], this is the opposite of European, East Asian or North American countries. We also see that low cultural and health awareness and the lack of television programs that educate the population of the dangers of physical inactivity and diseases resulting from it. The global cost of the low level of PA was estimated at 54 billion $ annually from direct health care in 2013 (WHO, 2018) [50], Another study confirmed that 47% of the disease burden in the Middle East and north Africa is largely due to noncommunicable diseases and is expected to reach 60% by 2020(Khatib, 2004) [25], Moreover, the Ministry of Health in Algeria does not provide figures or statistics on physical inactivity and its levels among the population, there are no educational publications, and the role of the school is almost non-existent in encouraging the practice of PA, and it is no secret that Algeria is a country where the income of the population between medium and low, many young people are unemployed, and in jobs with

insufficient income, this makes the majority do not have enough time for PA, some even consider it a luxury, and one study reported that low- and middle-income countries had an increased likelihood of physical inactivity (Pengpid, *et al*., 2015) [34].

This study is limited in that the questionnaire does not give accurate results, also, the sample size between males and females is different and this affected the percentages, and we did not know the energy intake of the sample and the type of food they ate.

5. Conclusions

This study showed us that young Algerians have a low level of physical activity, and it decreases sharply with age, the decline starts from the age of 27, females are also lower than males, the importance of this research is the first kind in Algeria, it examines an important aspect that has a major impact on public health, we also recommend that people should be encouraged to engage in physical activity, and that policies be designed to engage young people in various physical activities.

6. Acknowledgements

We thank all the sample members for accepting to participate in this research.

7. References

1. Abdulkarim SM. Adolescent health and health care in the Arab Gulf countries: Touday's needs and tomorrow's challenges. Internationl Journal of Pediatries and Adolescent Medecine. 2017; 4:1-8.
2. Abdullah-Skhiri H, Traissac P, Elali T. Nutrition transition among adolescents of a south mediterranean country: dietary patterns, association with socio-economic factors, overweight and blood pressure. Across-sectional study in Tunisia. Nutr J. 2011; 10:38.
3. Al-Hamdan A, Abdulmohsen H, Abdalla A. Comparative study of physical activity of hypertensives and normotensives: A cross-sectional study of adults in Saudi Arabia. Journal of Family and Community Medicine. 2012; 9(3):162-166.
4. Al-Hamdan N, Saeed A, Kutbi A, Choudhry, Nooh R. Characteristics, Risk Factors, and Treatment Practices of Known Adult Hypertensive Patients in Saudi Arabia. Int J Hypertens, 2011.
5. Al-Hazzaa H, Al-Ahmadi M. A Self-reported questionnaire for the assessment of physical activity in youth 15-25 years: Development, reliability and construct validity. Arab Journal of Food and Nutrition. 2003; 4:279-291.
6. Al-Nozha M, Al-Hazzaa H, Arafah M, Al-Khadra A, Al-Mazrou Y, Al-Maatouq M, *et al*. Prevalence of physical activity and inactivity among Saudis aged 30-70 years. A population-based cross-sectional study. Saudi Med J. 2007; 28:559-68.
7. Al-Nozha M, Abdullah M, Arafah M, Khalil M, Khan N, Al-Mazrou Y, *et al*. Hypertension in Saudi Arabia. Saudi Med J. 2007; 28:77-84.
8. Barbara E, Ainsworth W L. (Eds.) Compendium of Physical Activities: an update of activity codes and MET intensities.Medicine & Science In Sports & Exercise Retrieved from, 2000; 32(9). http://www.msse.org
9. Boudiba A, Mimouni Z S. Améliorer la prévention et les soins du diabète en Algerie: Revue des données Analyse et perspectives. Médecine Mal Métaboliques. 2011; 5(4):29-33.
10. Bouziotas C, Koutedakis Y, Nevill A, Ageli E, Tsigilis N, Nikolaou A, *et al*. Greek adolescents, fitness, fatness, fat intake, activity, and coronary heart disease risk. Arch Dis Child. 2004; 89(1):41-4.
11. bożena G, wojciech M, glinkowski. association of sports and physical activity with obesity among teenagers in poland. international journal of occupational Medicine and Environmental Health, 2018; 31(6):1-12.
12. Bull F, Pratt M, Shephard R, Lankenau B. Implementing national population-based action on physical activity–challenges for action and opportunities for international collaboration. Promotion & Education. 2006; 13(2):127-132.
13. Drygas W, Kostka T, Jegier A, Kunski H. Long-term effects of different physical activity levels on coronary heart disease risk factors in middle-aged men. Int J Sports Med. 2000; 21:235-241.
14. Eman S, Chaza A, Hala G, Carla M. Physical inactivity, gender and culture in Arab countries: a systematic assessment of the literature. BMC public health. 2018; 18:639.
15. Garawi F, Ploubidis G, Devries K, Al-Hamdan N, Uauy R. Do routinely measured risk factors for obesity explain the sex gap in its prevalence? Observations from Saudi Arabia. Bmc Public Health, 2015, 15. doi:10.1186/s12889-015-1608-6
16. Gordon-Larsen P, McMurray R, Popkin B. Determinants of adolescent physical activity and inactivity patterns. Pediatrics. 2000; 105(6):83-90.
17. Hallal P, Andersen L, Bull F, Guthold R, Hasbell W, Ekelund U, *et al*. For the lancet physical activity series working group. Global physical activity levels: surveillance progress, pitfals and prospects. The Lancet, 2012.
18. Hamrani S, Mehdad K, El Kari. Physical activity and dietary habits among Moroccan adolescents. Public Health Nutrition, 2014. doi:10.1017/S1368980014002274
19. Hiils A, Street S, Soam E. Physical activity and development and obesity. Curr Obes Rep. 2013; 2:261-266.
20. Hills A. Physical activity and mouvement in children: consequences for growth and development. Asia Pac J Clin Nut. 1995; 4:43-45.
21. Hiroaki I, Fumihiko K, Noriko H, Tomoe M, Takehisa m, Kazuhito Y, *et al*. Leisure-time physical activity in youth as a predictor of adult leisure physical activity among Japanese workers: a cross-sectional study. Environmental Health and Preventive Medicine. 2017; 22:37. doi:10.1186/s12199-017-0648-1
22. Houotari T, Nupponen H, Mikkelson L, Laako L, Kinjala U. Adolescent physical fitness and activity as prediactors of adulthood activity. Journal of sports sciences, 2011; 29(11):1135-1141.
23. Issad B, Asmaa E, Imane E. Objectively Measured

Physical Activity and Sedentary Time among Children and Adolescents in Morocco: A Cross-Sectional Study. Bio Med Research International, 2018; 7. doi:10.1155/2018/8949757
24. Karl P, Supa P. Leisure Time Physical Inactivity and Sedentary Behaviour and Lifestyle Correlates among Students Aged 13–15 in the Association of Southeast Asian Nations (ASEAN) Member States, 2007–2013. Int J Environ Res Public Health. 2016; 13:217.
25. Khatib O. Non-communicable diseases: risk factors and regional strategies for prevention and care. East Mediterr Health J. 2004; 10:778-788.
26. Lee I, Shiroma J, Lobelo F. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. The Lancet. 2012; 380(9838):219-229.
27. Mathers C, Stevens G, Mascarenhas M. Global Health risks mortality and burden of disease attrutable to selected majors risks. WHO, Geneva, 2009.
28. Mehio S A, Nasreddine L, Mokdad A, Adra N, Tabet M, & Hwalla N. Nutrition transition and cardiovascular disease risk factors in middle east and north afreica countries: reviewing the evidence. Ann Nutr Metab, 2010; 57(3-4):193-203.
29. Musaiger A. Overweight and obesity in eastern Mediterranean region: prevalence and possible causes. Journal of Obesity, 2011,17.
30. Musaiger A, Al-Ansari M. Barriers to practicing physical activity in the Arab countries," in Nutrition and physical activity in the Arab countries of the near east. Cairo, Egypt: FAQ Regional Offoce, 1999.
31. Musaiger A, AL-Mannai R, Tayyme & *et al*. Prevelence of overweight and obesity among adolescents in seven Arab countries: a cross-cultural study. Journal of Obesity, 2012, 5.
32. O'Dea J. Why do kids eat healthful food? Perceived benefits of and barriers to healthful eating and physical activity among children and adolescents. Journal of the American Dietetic Association. 2003; 103(4):497-501.
33. Pearson T, Blair S, Eckel R. AHA Guidelines for primary prevention of cardiovascular disease and storke: 2002 update. Consensus panel guide to comprehensive risk reduction for adult patients without cronary or other atherosclerotic vascular diseases. Circulation, 2002; 106:388-391.
34. Pengpid S, Peltzer K, Kassean H, Tsala J, Sychareun V, Muller R, *et al*. Physical inactivity and associated factors among university students in 23 low-, middle- and high-income countries. Int J Public Health. 2015; 60:539-549.
35. Qiuhong G, Ping Z, Jinping W. Morbidity and ùortality after lifestyle intervention for people with impaired glucose tolerance: 30-years results of the Da Quing Diabetes. Prevention Outcome study. Lancet Diabetes Endocrinol. 2019; 8587(19):30093-2.
36. Rguibi M, Belahsen R. Prevalence of obesity in morocco. Obes Rev. 2007; 8:11-13.
37. Riddoch C, Mattoks C, Deere K. Objective measurement of levels and patterns of physical activity. Archives of Disease in Childhood. 2007; 92(11):963-969.
38. Strong W, Malina R, Blimkie C, Daniels S, Dishman R, Gutin B, & *et al*. Evidence based physical activity for school-age youth. J Pediatr. 2005; 146(6):732-737.
39. Tammelin T. Adolescent participation in sport and adult physical activity. American journal of preventive medicine. 2003; 24(1):22-28.
40. Telama R. Tracking of physical activity from childhood to adulthood: a review. Obes Facts, 2009; 2:187.
41. Telama R, & Yang X. Decline of physical activity from youth to young adulthood in Finland. Med Sci Sports Exerc, 2000; 9:1617-22.
42. Tergerson J, & King K. Do perceived cues, benefits, and barriers to physical activity differ between male and female adolescents? Journal of School Health, 2002; 72(9):374-380.
43. Trang N, Hong T, Van Der Ploeg H, Hardy L, Kelly P, Diabley M, *et al*. Longitudinal sedentary behavior changes in adolescents in Ho Chi Minh City. Am J Prev Med. 2013; 44:223-230.
44. Trost S, Pate R, Sallis J. Age and gender differences in objectively measured physical activity in youth. Medicine & Science in Sports & Exercise, 2002; 34(2):350-355.
45. Wang C, Chen P, Zhuang J. Anational survey of physical activity and sedentary behavior of Chinese city children and youth using accelerometers. Research Quarterly for Exercise and Sport. 2013; 84(2):12-28.
46. Wen C, Wu X. Stressing harms of physical inactivity to promote exercise. The Lancet, 2012.
47. WHO. Countries: Algeria. Geneva, 2012.
48. WHO. Golabl recommendations on physical activity of health. Geneva: WHO, 2010.
49. WHO. Global statuts report on non-communicable diseases, 2010. Geneva, 2011.
50. WHO. Global action plan on physical activity 2018-2030: more active people for a healthier world. 2018.
51. Zaghtoul S, Ali H. Nutrition transition in the United Arab Emirates. European Journal of Clinical Nutrition. 2011; 65(12):1328-1337.