

## THE LEVEL OF HEALTH-RELATED PHYSICAL FITNESS AMONG THE INMATES OF REFORM AND REHABILITATION CENTERS IN JORDAN

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### ABSTRACT

The Directorate of General Security in Jordan has created sport fields in new prisons taking into consideration its importance for inmates. This is due to the belief that prisoners should be encouraged to spend interesting times, discharge their repressed energies and to improve their physical and mental states in addition to strengthening their social relations. Providing members and specialist officers to the inmates may decrease the problems inside prisons by doing these different kinds of physical activities.

The purposes of this study were to evaluate the level of health-related fitness of the inmates in the reform and rehabilitation centers in Jordan and to differentiate between them according to the time span spent in the prison.

The study sample consisted of (208) inmates who volunteered to participate in the tests out of 2400 inmates in the center. They were classified into different age categories and their condemnation period. The tests contained the health related physical fitness elements: muscle power, respiratory endurance, muscle strength, flexibility, and body composition in terms of body mass index.

Results showed that there were statistical differences between the categories in this study in some tests. It was concluded that there must be physical programs for inmates to prevent them from getting non-communicable diseases due to hypokinetic and sedentary life.

**Keywords:** Fitness, Health, Reform and Rehabilitation Centers.

## Introduction:

Inmates live in this world in a place isolated from the civil society, as a kind of a punishment against them that lasts for a certain period of time including life detention. The prevailing view about the prisons imply that they are bad places, but the fact imply that they sometimes could be much better from the outside, due to what they contain from welfare and luxury and that makes staying in them just like a pleasant stroll.

Here are some of the prisons which are different from the other prisons in the world as they are characterized by providing the excellent rehabilitation life as well as taking care of the inmates in terms of food, water, and education in addition to physical activity and taking care of their health.

1. The Norwegian Bastøy Prison, which includes about 100 inmates who live in huts overlooking the sea. Those inmates spend their time in horse riding, sunbathing, fishing, camping and playing tennis. They are also supposed to work in the prison's farm and eat from what is grown and produced in this farm (<http://www.takepart.com/photos/worlds-most-luxurious-prisons/bastoy-prison-norway>, 2015) (Appendix 1)
2. Leoben Justice Center in Austria. The criminals are sure that some prisons are better than the houses in which people live. Each prison cell includes a kitchen, bathroom and cupboard. ([https://en.wikipedia.org/wiki/Justice\\_Center\\_Leoben](https://en.wikipedia.org/wiki/Justice_Center_Leoben))
3. Pondok Bambu Prison in Indonesia. If you have too much money, you won't spend imprisonment period in an ordinary prison cell, instead you will spend it in a hotel-like prison with firm restraint. This luxurious prison looks better than many of the four-star hotels and doesn't look like a place for spending the time of punishment. This type of prisons demonstrates the amount of corruption in the sector of prisons in this area. Each prison cell was designed in a certain way, where it contains suitable furniture, karaoke devices, a refrigerator, a bathroom, a personal space, as well as air

conditioning. (<http://www.thejakartapost.com/news/2009/03/24/artalyta-transferred-pondok-bambu-prison.html>)

4. The Federal Correctional Institution, Sheridan is one of the luxurious prisons for male inmates in Oregon. It gives the inmates the opportunity to start a new profession instead of continuing in the path of crimes. It is clear that changing the professional path requires innovation and the ability to adapt, but it isn't difficult in such a case, where the inmates learn simple jobs, such as a physical fitness trainer or gardens coordinator.
5. Montgomery Federal Prison. It is just like Sheridan Institution. This prison which is situated in Alabama, gives the inmates the opportunity to change their life from criminals into new characters who work in new jobs, such as a cooker, a painter, attorney assistant, as well as many other professions, which represents a golden opportunity for those who wish to leave the life of crime and to live honorably.
6. The Federal Correctional Institution, Englewood. It is one of the luxurious prisons for male inmates in Colorado. It is located on the summit of Mount Rocky. Inmates can spend their time in playing billiards, table tennis, and it usually includes a small number of inmates, and it still modern since it has been built for about 20 years, which gives the inmates an opportunity to enjoy their time and make advantage of the large area.
7. Duluth Federal Prison. If the inmate is interested in music, then Duluth Federal Prison in Minnesota is the best place to spend the period of imprisonment, where it includes a number of musical instruments, such as the piano, the guitar and drums.
8. Bastrop Federal Correctional Institution. This prison which is situated in Texas, USA, is characterized by being too close to Osten Airport with a distance of no more than 48 km, in which the inmate may receive as many visitors as he wishes, but this doesn't mean that the possibility of escaping outside the country is easy, since the prison is under firm guardianship.

9. Oxford Federal Correctional Institution. Although Oxford Federal Correctional Institution, in Wisconsin, USA doesn't have the real luxury of the English name that it holds, it provides its inmates with the potential to participate in the aerobic, art and nutritional courses.
10. Schuylkill Federal Correctional Institution. We may consider Schuylkill Federal Correctional Institution, in Pennsylvania, USA as a cultural and sporting collection, where the prison contains sporting teams, playing yards, center for handcrafts, and that promotes the inmates to do their best in order to enjoy their incarceration period in this club-like prison.
11. Lompoc Prison, which is located in California in the United States, has marvelous gardens of eucalyptus and this makes the experience of being imprisoned there like a pleasant stroll. But the surrounding walls of the prison prevent you from enjoying more natural sights. There used to be tennis pitches, but they were removed and so the inmates can only enjoy playing baseball and volleyball.
12. Butner Federal Correctional Institution. This prison, which is located in North Carolina, USA, gained fame after Jeff Skilling was imprisoned there due to crimes related to the Enron Scandal. The prison is characterized by a high extent of luxury, in that one of the judges suggested that the prosecutor should go and have a vacation in that prison.
13. The County Prison in Los Angeles has units for those with special needs. Although it is one of the firm prisons in which the inmates may be exposed to shooting by snipers if they tried to walk inside the prison at night, this treatment changes 180 degrees in the units of those with special needs which is characterized by the simple status of living without any difficulties as well as the existence of a public phone.  
(<http://www.takepart.com/photos/worlds-most-luxurious-prisons/bastoy-prison-norway>)

Health fitness is considered as one of the most important bases of the human life whether the individual was athletic or non-athletic, as it is an important part of the general fitness of human being, and one of the comprehensive elements for fitness along with the mental, psychological and social fitness that qualify the human being to live in a balanced status in the society (Abbas, Eiman, Najem Al-deen, et al, 2013). As for the prisons of Jordan, they are called reform and rehabilitation centers, as a place where a certain part of the society spend their freedom detention period as punishment for a crime committed by someone and can affect the physical and mental health if we do not take into account some important issues such as exercises, food, exposure to sunlight and deep sleep (Kilani, Al-Yarobi, Zayed, Alzakwani, et al 2013).

Jordan utilized from the partnership with the European Union and the United States by building modern prisons that have courtyards containing playgrounds of football, basketball, handball and rooms for drawing. This is in addition to developing workshops for teaching the activities of blacksmithing, carpentry, as well as restructuring and painting cars.

The average number of inmates in these centers is 8000 inmates, representing a percentage of 13/10000 of the total population (the Department of Reform and Rehabilitation Centers, 2015) which imposes extra money and effort in case one of those inmates was exposed to the different diseases that prevail in the environment in which they live. Due to the importance of the physical activities in providing the inmates with the ability to improve their health and psychological status, the Public Security Directorate developed sports arenas in the new prisons, taking into account their importance for the inmates and encouraging them to have a good time in those playgrounds as well as benefiting from them in projecting their suppressed energies and improving their physical and psychological state, in addition to strengthening the social relationships and reducing the problems inside these prisons while providing professional members and officers to help them in practicing the various types of sports.

### **The statement of the problem:**

The human being is exposed to increasing risk factors by sedentary lifestyle diseases and other types of this age diseases in case of not practicing the activities that help him build a body that is capable of performing his daily and life duties in an optimal manner. Due to the presence of a part of these persons in circumstances that are beyond their control and their status as inmates in the reform and rehabilitation centers, they may suffer from a bad psychological state and deteriorating physical health. The prisons administrators could avoid these conditions by providing the potentials and supplies that encourage them to go out in order to vent the frustration and suppression in which they live which will in turn has a positive impact on their health, and consequently provides a lot of effort and money saving for the state.

Any country afford too many expenses due to the problems and difficulties suffered by the inmates in the reform and rehabilitation centers regarding the health issues that result from the nature of imprisonment that they were exposed to due to legal issues. Accordingly, these inmates will suffer from health problems which could lead to difficulties related to lack of physical activities, and so the state will be committed to treat those inmates inside these centers or in outside hospitals, which would require security and physical disadvantages that could be addressed by encouraging them to practice physical activities by providing the playgrounds, and the specialized trainers. Thus, it is necessary to detect the health and physical level of the inmates by providing the battery of physical fitness that is related to health to a number of them in order to contribute to treating such difficulties relating to lack of movement.

### **The significance of the study:**

It is well known that physical fitness is important for all the individuals in the society as well as the inmates of these centers due to its physical, psychological and social benefits that would contribute to qualifying the inmate so that he would return back to his society without complex psychological effects that suppress his freedom in these reform centers. There is a significant relationship between the good physical fitness and good health since the individuals who live inactive life are more vulnerable to disease over time, such as obesity, high body fat percentage, and the problems of heart and blood vessels, as well as their complications.

The individuals who don't practice regular physical activities may suffer from diseases of the joints and muscles, and so maintaining the good physical fitness by sports and nutrition are considered optimal protective factors regarding keeping healthy conditions in the different life stages (Kilani, 2015).

Since the period spent by the inmate may affect the physical and health level, the questions of the study were raised based on the effect of time duration spent by the inmate in the reform and rehabilitation center on his physical and health status.

Some elements of physical fitness that have been selected, where Cooper test, flexibility, strength of the arms as well as the test of a modified sit up were conducted, while body mass index used instead of body composition test.

### **The theoretical framework of the study:**

The nature of fitness:

It is simply the heart, lungs, blood vessels and muscle's ability to work in the optimum case which is represented by economy of effort and increasing in efficiency. Being physically fit is considered as a state of good health integration so that we can use most of our inherent capabilities achieve our work such as, cultivation of the land, house cleaning or trimming and cleaning the weeds from the garden and other daily actions that the human can be exposed to as a part of the daily routine. Therefore, the meaning of life would be more interesting when we enjoy and spend our time with vitality and activity.

There are five elements of physical fitness:

1. The cardiorespiratory endurance: It is the ability of heart and lungs to provide the oxidized blood to the working muscles; by increasing the efficiency of the heart and lungs this element develops, and it can be measured by several tests including the use of gas analysis device, treadmill and field (Cooper) test.

2. The muscular strength: The maximum effort made against resistance for one repetition which can be measured by using the hand grip (Dynamometer) as well as other devices.
3. The muscular endurance: It defined that the ability to perform repeated contractions such as the number of repetition of the muscles exercise at once. This is like a muscular strength, where the exercise will be particular for the working muscles. Both are very important to prevent lower back pain. This element can be measured by sit-up and the push-up exercises, as reported in this study.
4. Flexibility: The ability of the joint to move in a full range of motion measured by angle, but the lack of this element in the appropriate manner provides the likelihood of sports injuries.
5. Body composition: It consists of lipid weight (obesity) and body weight (muscles, bone and tissues). The weight ratio of lean to fat changes with age, so that at least the ratio of lean decreases while the ratio of fat increases, but the use of aerobic exercise (exercises that stimulates and strengthens the heart, and the lungs, in which the muscular contractions depend on the availability of oxygen and burning fat, such as the sport of long walking, running and fitness) slows down this natural change due to the burning of fat as an energy source and help building the muscles and maintaining its tones. (Kilani, 2006).

The body mass index (BMI) was used as a scale that reflects body composition for the difficulty of measuring the fat ratio of the study sample.

### **The law of the Jordanian reform and rehabilitation center**

The law of the Jordanian reform and rehabilitation center number (9) for year 2004 which was published in the formal newspaper numbers 4656 in 29/4/2004 was issued in order to organize the work of these centers taking into consideration the rights of the inmates in all the domains, as well as their duties. This law was consistent with the rules that were recommended by the codes of the united nations during the first conference to



prevent crime and the treatment of criminals which was held in Geneva in 1955 and approved by social and economical council with its two decisions (633) in 31 July 1957 and (2076/d-62) in 13 May 1977. These decisions recognized the right of the inmate of education and luxury as cited in section 78 (cultural and recreational activities should be organized in prisons in order to maintain the mental and physical luxury of the inmates.

They also recommended about discrimination of treatment with inmates who are imprisoned based on financial issues (debts), where less firm regulations are applied to them in comparison with criminals.

The inmates in Jordan receive the healthcare by the Ministry of Health either in the center or in the health centers and hospitals that belong to them, in coordination with the public security directorate/the department of reform. The inmates are also taken out to the sunny areas by the officers and the members who are responsible for the administration of the center according to a certain program which guarantees that the inmates won't escape or do any violations of the law against themselves or their colleagues, and allowing them to practice sports in the arenas and stadiums which are located within the walls of the center.

The inmates are also provided with three meals, which are good enough in terms of quality and quantity, and similar to those given to the prison guards; as members and officers of the Public Security, in addition to a supermarket in all the centers, where the merchandise are sold to the inmates' guests, and this gives the inmates the option of not eating the meals offered to them by the management of the Centre.

The researchers in this study illustrated that the studies are very few in this area regarding the targeted group in this study.

### **The study objectives:**

The study aims at:

1. Identifying the level of health-related physical fitness among the inmates of reform and rehabilitation centers.
2. Identifying the differences between inmates regarding level of health-related physical fitness which are attributed to the period that the inmates spend in the reform and rehabilitation centers.
3. Identifying the degree at which the inmates have health-related physical fitness in comparison with the international standards.

The questions and hypotheses of the study:

1. There are no differences in the level of health-related physical fitness attributed to the period that the inmates spend in the reform and rehabilitation centers.
2. What is the level of health-related physical fitness among a sample of inmates in comparison with the international standards?

### 3. The terminology of the study:

4. The Reform and Rehabilitation Center, has been the second section of the Law of Correction and Rehabilitation Centers No. (9) of 2004, which was published in the Official Journal No. (4656) in 29-4-2004, defined the reform and rehabilitation center as the declared place as a center for Reform and rehabilitation.
5. They are the punitive institutions where the person spends the period of imprisonment as a result of violating the laws, taking into account the commitment to the humanitarian principles in treatment.
6. The same section of the law defined the inmate as the person, male or female, who is imprisoned in the center to implement decision issued by a judicial authority or any competent authority.

### 7. The study limitations:

8. The spatial domain: Reform and Rehabilitation Center, Sewaqa, The Hashemite Kingdom of Jordan.
9. The human domain: The inmates of Swaqa's reform and rehabilitation Center.

10. The temporal domain: April 2014 to August 2014.

### Methods:

The researchers used the descriptive approach due to its appropriateness to the nature of the study.

Population: The inmates of the reform and rehabilitation centers in Jordan were with total number of (8000) inmates.

The study sample: The Rehabilitation Center of Sewaqa was selected for testing. The study sample consisted of (208) inmates who volunteered to participate in the tests out of 2400 inmates in the center. Tables (1 & 2) below describe the sample:

Table 1 Means and standard deviations (SD) of age, height, and weight

Variables	Mean	SD
Age	29.68	7.60
Height	171.63	6.25
Weight	72.28	10.96

Table 2 Description of the imprisonment period and the time served for the inmates in the reform and rehabilitation Centers

Variables	Minimum period	Maximum period	Mean	SD
Imprisonment period (years)	0.20	20.0	6.13	4.16
Served time (years)	0.10	17.0	3.14	2.64

The data in table 2 show that the minimum condemnation period was (0.20) years; i.e. two months and 12 days, while the maximum duration of condemnation was 20 years. It was also indicated that the least period that was spent in correctional and rehabilitation centers was (0.10); i.e. one month and six days while the maximum period that was spent there was (17.0) years.

The value of the Mean for the Condemnation period was 6.13 years, while the value of the Mean for the spent Condemnation period was 3.14 years.

### Results:

This study aims at identifying the level of health-related physical fitness among a sample of inmates in the reform and rehabilitation centers. Table (3) illustrates the value of the mean for the exercise of measuring the muscular strength for the sample is 21.87 with a standard deviation of 11.34 while the arithmetic mean of the muscular endurance of the sample was 26.24 with a standard deviation of 9.47. As for the cardiorespiratory endurance, the arithmetic mean of the sample was 20.39 with a standard deviation of 3.38, while the arithmetic mean of the sample regarding flexibility was 4.35 with a standard deviation of 9.88, and the arithmetic mean of the BMI of the sample was 24.5 with a standard deviation of 3.54.

Table 3 Means and Standard Deviations of the elements of health-related fitness for the inmates in the reform and rehabilitation centers

Variable	Arithmetic mean	Standard Deviation
Muscular strength	21.87	11.34
Muscular endurance	26.24	9.47
Cardiorespiratory endurance	20.39	3.38
Flexibility	4.35	9.88
Body Mass Index	24.5	3.54

The second objective of the study was to identify the differences between the inmates' level of health-related physical fitness attributed to the served period that the inmate spends in the reform and rehabilitation centers, where according to illustration on Table 4, there are differences between the elements of the health-related physical fitness. In order to verify the importance of these differences, the researcher used the ANOVA, where Table 5 demonstrates the results of this analysis.

Table 4 Means and Standard Deviations of the elements of fitness distributed according to the variable of time served in the center

Variables	Served time	Number	Arithmetic mean	Standard Deviation
Muscular strength	Less than 6 months	10	15.20	8.20
	6 months- less than 2 years	98	23.72	10.65
	2 years- less than 5 years	72	20.64	11.95
	5 years or more	28	20.93	12.12
Muscular endurance	Less than 6 months	9	26.44	7.21
	6 months- less than 2 years	96	28.11	8.03
	2 years- less than 5 years	71	24.73	10.46
	5 years or more	27	23.44	11.07
Cardiorespiratory endurance	Less than 6 months	0	.	.

	6 months- less than 2 years	40	20.49	3.78
	2 years- less than 5 years	18	19.99	2.18
	5 years or more	8	20.81	3.75
Flexibility	Less than 6 months	10	0.05	11.36
	6 months- less than 2 years	94	4.35	9.93
	2 years- less than 5 years	68	4.91	9.58
	5 years or more	25	4.56	10.08
BMI	Less than 6 months	16	22.99	2.83
	6 months- less than 2 years	53	24.06	3.10
	2 years- less than 5 years	94	24.55	3.62
	5 years or more	45	25.44	3.89

Table 5 ANOVA of the elements of health-related fitness depending on the variable of the time served in the center

Variables	Source of variation	Sum of squares	Degrees of freedom	Mean of squares	F value	Significance level
Muscular strength	Between groups	915.87	3	305.29	2.42	0.067
	Inside the group	25705.63	204	126.01		
	Total	26621.50	207			
Muscular endurance	Between groups	710.11	3	236.70	2.71	0.046
	Inside the group	17394.54	199	87.41		
	Total	18104.65	202			
Cardiorespiratory endurance	Between groups	4.67	3	1.56	0.13	0.941
	Inside the group	737.13	62	11.89		
	Total	741.80	65			
Flexibility	Between groups	216.16	3	72.05	0.74	0.532
	Inside the group	18909.27	193	97.98		
	Total	9125.43	196			
BMI	Between groups	87.08	3	29.03	2.36	0.072
	Inside the group	2505.68	204	12.28		
	Total	2592.76	207			

The table shows that the calculated value of F for the variable of (muscular strength) measured by the exercise of bending and extending the arms was (2.42) with a level of significance (0.067) and the value of the variable (muscular tolerance) measured by the exercise of sitting from lying posture (the stomach exercise) was (2.71) with a level of significance (.046). The value for respiratory periodic tolerance measured through the Cooper test was (0.13) with a level of significance of (.941). The flexibility measured by the graded box was (0.74) with a level of significance of (0.532), while the value for the variable of body mass index was 2.36 with a level of significance of 0.072. all the values of the level of significance have not statistical significance because they are larger than 0.05 except for the value of the significance level for the variable of muscular tolerance measured by the exercise of sitting from the lying position (stomach exercise) which was less than 0.05 and that indicate that there are Statistically significant differences in this test between the periods that were spent in the center.

In order to identify the sources of these differences, and variations, Scheffé's test for post comparisons was used and Table 6 shows the results of this test:

Table 6 Scheffé's test for post comparisons in order to identify the sources of these differences in the variable of stomach exercise

Variables	Mean	Served time	6 months- less than 2 years	2 years- less than 5 years	5 years or more
Mascular endurance	26.44	Less than 6 months			
	28.11	6 months - less than 2 years			
	24.73	2 years - less than 5 years			
	23.44	5 years or more			



The listed results indicate that there are differences between the individuals whose imprisonment period is six months - less than 2 years and individuals whose imprisonment period is five years or more, so that the significance of these differences was in favor of those who spent a period of 6 months - less than two years, in that their arithmetic mean value was the highest.

The third objective of the study is to identify the extent to which inmates have the health-related physical fitness in comparison with the globally approved standards. The average age of the sample is less than (30) years and the sample has an arithmetic average of (21.87) and a standard deviation of (11.34), regarding the muscular strength which is considered as weak according to the international standards of fitness which falls between (20-35) (Table 7). The average muscular tolerance was (26.24) with a standard deviation of (9.47), which is located in the medium category according to international standards (Table 8). The average of respiratory periodic tolerance of the sample is (20.39) with a standard deviation of (3.38), which is considered as weak, according to the international standards of fitness (Table 9). The average of flexibility of the sample is (4.35) with a standard deviation of (9.88), which is considered as less than average according to the international standards of fitness (Table 10). As for the body mass index, the average of the sample is (21.13) with a standard deviation of (3.42), which is considered as suitable according to the International Standards of Fitness (Table 11).

### Discussion:

In order to answer the first hypothesis, which states that there are no differences in the level of the elements of health-related fitness attributed to the period served in the reform and rehabilitation center, Table 4 shows that there are no statistical significant differences related to the time the inmate spends in the reform and rehabilitation centers, and the muscular endurance test shows that there are statistically significant differences at the level 0.05 in favor of the period of 6 months up to two years (Table 6). Therefore, the hypothesis is rejected as it was based on the idea that the center is one and that the activities and food are for all, but the served period was one of the factors that contributed to the difference in the level of health-related physical fitness although

the study of (Al-Kharouf, 2003) demonstrate positive trends towards the physical activity regardless the served period.

As for the second question, which states: Is there any effect for the period that the inmate spends in the reform and rehabilitation centers, the researcher through Table 3 suggest that the period that the inmate spends in the reform and rehabilitation centers affect negatively on their fitness due to reasons related to their psychological status and thinking about their humanitarian and familial status and that makes them feel bored, depressed and not willing to do any physical activity in order to improve their physical fitness (Zayed and Kilani, 2014).

The results of the conducted tests (Table 3 and 4) were not consistent with the international standards of physical fitness towards health in comparison with Tables 7 to 11. The lack of effective participation in the tests and leaving the tests by too many of those who have volunteered to participate in the study without asking for permission or find a reason to leave is evident by the difference in the numbers between the samples that were selected, and this contravenes with the perspective of the researchers in the study of (Al-Kharouf, 2003) which concluded that the inmates are motivated to participate in the physical activities.

Based on the above, the researchers believe that despite the lack of similar researches on the targeted category of the research, comparing the study results with the global standards of fitness for health suggest that the inmates aren't interested in the health-related physical fitness, where the sample gained an arithmetic average of (21.87) and a standard deviation of (11.34), regarding the muscular strength which is considered as weak according to the international standards of fitness. (<http://www.fitnessyard.com/articles-and-information/body-building>).

Table 7 Cardiorespiratory endurance standard

Age	29-20	39-30	49-40	59-50	60+
Excellent	More than 54	More than 44	More than 39	More than 34	More than 29
Good	54-45	44-35	39-30	34-25	29-20
Average	44-35	34-24	29-20	24-15	19-10
Weak	34-20	24-15	19-12	14-8	9-5
Very weak	Less than 20	Less than 4	Less than 3	Less than 2	Less than 1

As for Cardiorespiratory endurance for the same category, it was within the average level with a mean of (20.39) and a standard deviation of (3.38). The traveled distance was measured in kilometers in order to compare the result in accordance with the taxonomic table of the international standards.

Table 8 Cooper test results for walking / running for 12 minutes

Classification	Less than 30 years	39- 30 years	49-40 years	More than 50 years
Very weak	Less than 1.60 km	Less than 1.52 km	Less than 1.36 km	Less than 1.28 km
Weak	1.99-1.60	1.83-1.52	1.67-1.36	1.59-1.28
Average	2.39-2.01	2.23-1.85	2.07-1.68	1.99-1.60
Good	2.80-2.41	2.63-2.25	2.47-2.09	2.39-2.01
Excellent	More than 2.80	More than 2.63	More than 2.47	More than 2.39

As for the muscular endurance (sit-up exercise), the average muscular endurance was (26.24) with a standard deviation of (9.47), which is located in the weak to medium category according to international standards regarding the inmates' age.

Table 9 Sit-up standards

Age/ classification	Less than 35	35-44	More than 45
Excellent	60	50	40
Good	45	40	25
Average	30	25	15
weak	15	10	5

As for the test of flexibility, the average of flexibility of the sample is (4.35) with a standard deviation of (9.88), which is considered as less than average according to the international standards of fitness.

Table 10 Flexibility standards

Assessing flexibility	
Excellent	More than 14 cm
Good	11-13
Average	7-10
Less than average	4-6
weak	Less than 3

Table 11 Body Mass Index

(20) - (24.9) kg / m - suitable limits.

(25) - (29.9) kg / m - an increase in weight.

If the body mass index exceeds 30 kg /m - an index of having obesity.  
If the BMI exceeds 40 kg/m it is the index of having too much obesity.  
(wikipedia.org 2016)

Since the sample falls in the first category regarding the mean of weight and the body mass index, the researchers attribute that to the limited meals that are given to the inmates in terms of calories and the lack of the food that cause obesity in their particular market inside the center, which makes the inmate weight within the suitable limits. On the other hand, the meals could be enough for some inmates, but not for others taking into consideration that the sample is voluntary and wasn't chosen randomly, and so it doesn't represent the normal distribution of the study population (Kilani and Abu-Eishah, 2010).

### **Conclusions and recommendations:**

Based on the results of the tests, the study concluded the following:

1. There is a general weakness in health-related physical fitness level attributed to the lack of attention to inmates by those who are in charge of the center regarding improving the health and physical condition.
2. When the inmate spends longer period in the reform centers, his physical ability decreases regarding exerting more force during muscular effort.

### **Recommendations:**

1. The researchers recommend encouraging the inmates in the reform and rehabilitation centers to do sports activities through regulated and compulsory programs that are activated and traced by the senior management of the center.
2. Assign specialists to supervise the implementation of sports programs to suit all the ages in the centers and giving the inmates the freedom to choose the type of activity that they like, taking into account the regulations and laws.

3. Hiring counselors in order to encourage the inmates to practice sports activities and to get rid of frustration and depression as well as providing lyrical and musical recordings that encourage them to improve their mental state and their desire to participate.



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## APPENDICES

Appendix 1 Shows an image of some of the facilities and rooms in Bastoy Prison

