EFFECT OF RAMADAN FASTING ON ANTHROPOMETRIC VARIABLES PHYSICAL FITNESS COMPONENTS AND PHYSIOLOGICAL VARIABLES OF MUSLIM MALE SCHOOL GOING CHILDREN

(**Received on**: 19 June 2013, **Reviewed on**: 23 Aug 2013 and **Accepted on**: 21 Sep 2013)

Dr. Gopal Chandra Saha, Associate Professor,
Dept. of Physical Education, Jadavpur University, Kolkata, (W.B.)
Mr. Shantanu Halder, Research Scholar,
Dept. of Physical Education, University of Kalyani, (W.B.)
Dr. Atanu Das, Assistant Professor,
Rabindra Mahavidyalaya, Champadanga, Hooghly, (W.B.)



Abstract

The purpose of the study was to investigate the effect of Ramadan Fasting during Ramjan month on Anthropometric Measurements Physical Fitness Components and Physiological Variables of Muslim male School Going Children. The subjects undertaken for the study (N=77), age ranging from 10 -20 years, were from different Madrasa school of north 24 Parganas District of West Bengal. The Mean ± SD of age and height of the students were (13.92 ± 2.36) and (151.41 ± 12.99). The parameters chosen for this study under Anthropometric Variables were Weight, Height and Fat percentage, under Physical Fitness components were Flexibility, Abdominal Strength and Shoulder Strength, whereas under Physiological Variables were blood pressure profile. The test were administered prior to the start of Ramadan Fasting, the month of Ramjan and after the completion of one month of Ramadan Fasting and both the data were collected at the respective school premises. To investigate the effect of Ramadan Fasting during Ramjan month on Anthropometric Measurements, Physical Fitness Components and Physiological Variables on Muslim male School Going Children, the 't' ratio was applied at $p<0.05$ level of significance. The result suggested that the Ramadan Fasting have positive and significant effect on Anthropometric Measurements, Physical Fitness Components and Physiological Variables on Muslim male School Going Children.

Keywords: Roja, Muslim, Physical, Physiological and Anthropometric

Introduction

Fasting is primarily the act of willingly abstaining from some or all food, drink, or both, for a period of time. An absolute fast is normally defined as abstinence from all food and liquid for a defined period, usually a single day (24 hours), or several days. Other fasts may be only partially restrictive, limiting particular foods or substance. The fast may also be intermittent in nature. Fasting practices may preclude sexual intercourse and other activities as well as food. Ramadan fasting is one of the 5 pillars of Islam and one of the most significant ibadat (worships) of Islam (Aldouni et. al., 1998). Each year, millions of Muslims refrain from eating or drinking from sunrise (Sahur) to sunset (Iftar) during the holy month of Ramadan, which lasts between 28 and 30 days. Thus, Ramadan fasting is similar to ADF, because both fasts incorporate feast periods and fast periods. The feast periods and fast periods of Ramadan fasting are each 12 hours in length on average (Faye et. al. 2005), which amounts to half of the 24-hour length for both the feast periods and fast periods of ADF. Another important difference between the two forms of fasting is that fluid intake is forbidden during the fast periods of Ramadan, whereas it is permitted at all times under an ADF protocol. The common dietary practice of Ramadan fasting is to consume one large meal after sunset and one lighter meal before dawn (Aziz et. al 2010), but some Muslims consume an additional meal before sleeping (Borg, 1985). Muslims consume a greater variety of foods during Ramadan compared with the rest of the year (Durnin, 1974). Also, sugary foods and drinks are consumed more frequently during Ramadan (El Ati, 1995). The benefits of fasting must be preceded by a look at the body's progression when deprived of food. Due to the lack of incoming energy, the body must turn to its own resources, a function called autolysis. "Detoxification is a normal body process of eliminating or neutralizing toxins through the colon, liver, kidneys, lungs, lymph glands, and skin." This process is precipitated by fasting because when food is no longer entering the body, the body turns to fat reserves for energy. A second prescribed benefit of fasting is the healing process that begins in the body during a fast. During a fast energy is diverted away from the digestive system due to its lack of use and towards the metabolism and immune system.

Fasting enables rest for the digestive system, and this saved energy goes into self-healing and repairing operations. Cleansing and detoxification in the intestines, blood and cells heals the body from many ailments. Fasting thus, invigorates the immune system to function at its best and helps promote physical and emotional health, by rejuvenating the body. Fasting improves mental alertness - when toxins are cleared out of the lymphatic system and blood stream, it improves mental clarity. Further, eating less results in energy conservation, which can be used by the brain for thinking tasks. Fasting is simply a process of deep physiological rest. This rest period helps you rebuild functioning power and recover from the energy dissipation caused by hectic daily schedules and abusive living habits (Ravi, 2009). To our knowledge, no study has examined the effect of Ramadan Fasting during Ramjan month on Anthropometric Measurements Physical Fitness Components and Physiological Variables of muslim male school going children. Therefore, the aim of this study was to assess the effects of Ramadan fasting on several Anthropometric, Physical Fitness and Physiological Variables of Muslim male school going children before and after Ramadan.

Methodology

The subjects undertaken for the study (N=77), age ranging from 10 -20 years, were from different Madrasa school of north 24 parganas District of West Bengal. The Mean ± SD of age and height of the students were (13.92 ± 2.36) and (151.41 ± 12.99). The parameters chosen for this study under Anthropometric Variables were Weight and Fat percentage, under Physical Fitness components were Flexibility, Abdominal Strength and Shoulder Strength, whereas under Physiological Variables were blood pressure profile. The test were administered prior to the start of Ramadan Fasting, the month of Ramjan and after the completion of one month of Fasting (Roja) and both the data were collected at the respective school premises. To investigate the effect of Ramadan Fasting during Ramjan month on Anthropometric Measurements, Physical Fitness Components and Physiological Variables on Muslim male School Going Children, the 't' ratio was applied at $p<0.05$ level of significance.

Findings

Table – 01
EFFECT OF FASTING ON ANTHROPOMETRIC VARIABLES PHYSICAL FITNESS COMPONENTS AND PHYSIOLOGICAL VARIABLES OF MUSLIM SCHOOL GOING CHILDREN

GROUPS		MEAN	S.D.	MD	S.E.M	'T' RATIO
Weight in Kg	PRE	37.90	9.63	1.99	0.09	22.18*
Weight In Kg	POST	35.91	9.17			
Fat Percentage	PRE	16.98	6.02	0.64	0.08	8.40*
Fat Percentage	POST	16.34	5.46			
Sit and Reach in inches	PRE	24.51	6.93	4.27	0.13	31.90*
Sit and Reach in inches	POST	28.78	6.36			
Sit ups/Min in numbers	PRE	22.38	7.33	4.26	0.11	39.29*
Sit ups/Min in numbers	POST	26.64	7.10			
Pushups in numbers	PRE	15.21	5.35	3.91	0.10	38.49*
Pushups in numbers	POST	19.12	5.54			
Systolic Blood pressure	PRE	114.14	14.15	13.22	0.75	17.65*
Systolic Blood pressure	POST	100.92	9.68			
Diastolic Blood pressure	PRE	65.46	9.51	2.78	0.39	7.21*
Diastolic Blood pressure	POST	62.66	6.87			
Body Mass Index	PRE	16.46	2.62	1.05	0.06	17.05*
Body Mass Index	POST	15.41	2.16			
Basal Metabolic Rate	PRE	1224.79	190.79	144.04	6.16	23.40*
Basal Metabolic Rate	POST	1080.75	163.57			
Pulse Rate/Min in No	PRE	87.01	15.41	6.43	0.53	12.06*
Pulse Rate /Min in No	POST	80.58	11.74			

* Significant at 0.05 level of significance.
For one tailed test Tabulated '$t_{.05}$' (n-1) = $t_{.05}$ (76) =1.67

The findings of the study revealed that the effect of Ramadan fasting during Ramjan month on Anthropometric Measurements, Physical Fitness Components and Physiological Variables of Muslim male School Going Children participated in the study improved significantly from pre-test to post-test. From table-02 as well as figure -01,02 and 03, it is clear that the tabulated 't' ['t' value for weight (22.18), Fat percentage (8.40), Flexibility (31.90), Sit ups (39.29), Push ups (38.49), Systolic (17.65), Diastolic (7.21), BMI (17.05), BMR (23.40) and Pulse Rate (12.06)] is greater than calculated 't'(1.67).

Discussion of Findings

The results show that Ramadan fasting significant effect on Muslim male School Going Children. Previous studies have reported that Ramadan fasting decreases body weight and body fat percentage (Bouhlel et al.; 2006, Chaouachi et. al; 2008). Ramadan fasting decreases (Maislos et. al.; 1993, Sarraf-Zadegan; 2000) the LDL-C/HDL-C ratio. It appears that the observed decrease in body weight may be due – at least in part – to dehydration as suggested by (Bouhlel et al. 2006). These decreases may also be partly a function of increased utilization of stored body fat. Such a finding has been reported in previous investigations (Ramadan et. al.; 1999, Aziz et. al 2010) In the present

investigation, carbohydrate consumption decreased by 4.9% during Ramadan, which may have resulted in decreased carbohydrate oxidation and increased fat oxidation. The lack of improvement in HOMA-IR or FBS despite reduction in body weight may be due to decrease in total body water content instead of body fat content after Ramadan fasting. Most reports are similar to these results (Adlouni et. al.; 1997, Khatib and Shafagoj; 2001). In one study among healthy males, a significant reduction in skin fold thickness was reported during Ramadan fasting (Muazzam,1991).

Most studies have reported that physical performance can be maintained when training duration, intensity, and loads are unchanged during the Ramadan intermittent fast (RIF) compared with the pre-Ramadan period. Chaouachi et al.; 2009, Karli et al.; 2007 and Leiper et al. 2008) For example, Chaouachi et al.(2009) demonstrated that the physical performance of 15 elite judokas was mostly unaffected during Ramadan, despite maintaining their usual high training loads and reporting increased perceptual fatigue. Similarly, Karli et al. (2007) also demonstrated that when strengthpower training regimes were maintained, and daily food intake, body fluid balanceand daily sleeping time were preserved through Ramadan, that body composition, anaerobic power and capacity, and lactate metabolism were unaffected. These results show that high-level athletes can maintain performance during Ramadan if physical training, diet, and sleep are well-controlled.

There was a significant decrease in Physiological variables (Nematy et al., 2012). Our observation of decreases in systolic and diastolic blood pressure is supported by the findings of (Athar and Habib, 1994). The body has regulatory mechanisms that activate during fasting. There is efficient utilization of fat (Maislos et al. 1998) And basal metabolism slows down during fasting (Maislos et al. 1998)contrary to the popular thinking, it was found that intake of a moderately.

Referrences

Adlouni A, Ghalim N, Benslimane A, Lecerf JM, Saile R: (1997) Fasting during Ramadan induces a marked increase in high-density lipoprotein cholesterol and decrease in low-density lipoprotein cholesterol. Ann NutrMetab; 41(4):242–249.

Athar, S. and M. Habib, (1994) Management of stable type 2 diabetes mellitus NIDDM during Islamic fasting in Ramadan. Paper presented at the First International Congress on Health and Ramadan;:19-22 January, Casablanca, Morocco.

Aziz AR, Wahid MF, Png W, et al. (2010) Effects of Ramadan fasting on 60 min of endurance running performance in moderately trained men. Br J Sports Med.; 44:516–21.

Borg G. , (1985), An introduction to Borg's RPE-scale. Ithaca, NY: Mouvement Publications;.

Bouhlel E, Salhi Z, Bouhlel H, et al. (2006),Effect of Ramadan fasting on fuel oxidation during exercise in trained male rugby players. Diabetes Metab.; 32:617–24. Chaouachi A, Chamari K, Roky R, et al. (2008), Lipid profiles of judo athletes during Ramadan. Int J Sports Med.;29:282–8.

Chaouachi A, Coutts AJ, Chamari K, et al. (2009), Effect of Ramadan on athletic performance in judo-athletes. J Strength Cond Res..

Durnin JVGA, Womorsley J. (1974), Body fat assessed from total density and its estimation from skinfold thickness: measurements on 481 men and women aged from 16 to 72 years. Br J Nutr.;32:77–97.

El Ati J, Beji C, Danguir J., (1995), Increased fat oxidation during Ramadan fasting in healthy women: An adaptive mechanism for body-weight maintenance. Am J Clin Nut.; 62:302–7.

Faye J, Fall A, Badji L, Cissé F, et al., (2005), Effet du ramadan sur le poids, la performance et la glycémie au cours d'un entraînement à la résistance. Dakar Med.;50:146–51.

Karli U, Guvenc A, Aslan A, Hazir T, Acikada C., (2007), Influence of Ramadan fasting on anaerobic performance and recovery following short time high intensity exercise. J Sports Sci Med.; 6:490–497.

Khatib FA, Shafagoj YA., (2001) Metabolic alterations as a result of Ramadan fasting in non-insulin-dependent diabetes mellitus patients in relation to food intake. Saudi Med J, 25(12):1858–1863.

Leiper JB, Junge A, Maughan RJ, Zerguini Y, Dvorak J. (2008;),Alteration of subjective feelings in football players undertaking their usual training and match schedule during the Ramadan fast. J Sports Sci. 26(Suppl 3):S55–S69.

Maislos M, Khamaysi N, Assali A, Abou-Rabiah Y, Zvili I, Shany S. (1993) Marked increase in plasma high-density-lipoprotein cholesterol after prolonged fasting during Ramadan. Am J Clin Nutr.;57:640–642.

Maislos, M., Y. Abou-Rabiah, I. Zuili, S. Iordash and S. Shany, (1998) Gorging and plasma HDLcholesterol - the Ramadan model. Euro. J. Clin. Nutr. 52:127-130.

Mohsen Nematy, Maryam Alinezhad-Namaghi, Masoud Mahdavi Rashed, Mostafa Mozhdehifard, Seyedeh Sania Sajjadi, Saeed Akhlaghi, Maryam Sabery, Seyed Amir R Mohajeri, Neda Shalaey, Mohsen Moohebati and Abdolreza Norouzy, (2012) Effects of Ramadan fasting on cardiovascular risk factors: a prospective observational study. Nematy et al. Nutrition Journal; 11:69.