

## Original Article

### Demographic pattern of weight control behaviours of Rivers State karate athletes

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#### Abstract

**Purpose:** The study aimed to find out the demographic pattern of weight control behaviours of Rivers state karate athletes.

**Material and Method:** A structured questionnaire was used to collect data from eighteen karate athletes. The data generated were analyzed using percentage and chi-square statistics.

**Results:** It was found that majority of the karate athletes participate in weight training/exercise programme, decreased their expenditure of calories, increased their fluid intake, eat excess food and increased their consumption of calories in order to gain weight. It was found that majority of the athletes decreased their consumption of calories, and increased their expenditure of calories through exercise, restrict food intake, dehydrate, and over-exercise to lose weight. Higher proportion of the male athletes engage in weight gain behaviours than the female karate athletes, while higher proportion of female karate athletes engage in weight loss behaviours than their male counterparts. Again, greater percentage of the athletes aged 25 years and above engage in weight gain, and weight loss behaviours than their counterparts who are less than 25 years. The study showed that greater proportion of the athletes with less than 2 years of sporting experience engage in weight gain, and weight loss behaviours than karate athletes with 2 years and above as their years of sporting experience.

**Conclusion:** Gender, age, and years of sporting experience had no significant influence on the pattern of weight gain, and weight loss behaviours of karate athletes. As a form of intervention, necessary recommendations were made.

**Key words:** Demographic pattern, weight control behaviours, karate, athletes.

#### Introduction

The prevalence of weight control especially weight gain and weight loss behaviours in athletic setting is a public health and social issue that has attracted societal concern in the past decades. Both adolescent males and females, according to Soliah, Walter, Barnes and Yeang (2003), are discontent with their body weight and body composition. With the growth and advancement of youth sports, children and adolescents are becoming more involved in sports in which weight control is perceived to be advantageous for the individual and/or team. (Reginald et al., 2005). There are a variety of weight-control behaviours that may cause weight loss or gain (Spelke, 1997). In this study, weight control behaviours are those conscious and deliberate actions of an individual to either gain weight, lose weight or be in ideal, normal or expected weight range of his or her age and gender which is generally acceptable within a social context, setting, or sport such as karate.

Athletes are one population that frequently engages in weight-control behaviours (Depalma et al., 1993; Spelke, 1997). The weight-control behaviours athletes employ are not always appropriate or healthy (Round-Table, 1985). In order to compete within the expected weight range (Brownell & Rodin, 1992; Ashley, 1996; Perriello, 2001), and to increase performance or to successfully compete in their sport (Davis, 1992; Sykora, Grilo, Wilfley & Brownell, 1993), many athletes engage in different weight control behaviours. Spelke (1997) noted that unhealthy eating behaviours and illegal drugs are often employed in an effort to achieve a perceived ideal weight for a given sport. According to the studies conducted by Black and Burckes-Miller (1988), and Dummer, Rosen, Heusner, Roberts & Counsilmen (1987a), people engage in behaviours such as taking pills, diuretics, and laxatives.

Among highly competitive athletes including karate athletes, unhealthy eating behaviours are rampant (Dummer et al., 1987a; Ryan, 1995). Unhealthy weight-control behaviours, according to Spelke (1997), are dangerous, and can threaten the health and life of student athletes. Unhealthy attempts at weight-control especially weight loss include disordered eating (Rosen, McKeag, Hough, & Curley, 1986), voluntary dehydration, food restriction, over-exercising and vomiting, using rubber suits, steam baths or saunas, using anorexic drugs, laxatives, diuretics, diet pills, nutritional supplements (Gisolfi & Duchman, 1992; Johnson, 1994; Reginald et al., 2005). On the other hand, decrease in energy or calories intake; increase in calories

expenditure and increase fluid intake (Reginald et al., 2005; Perriello, 2001) are the healthy weight-loss methods. In a study conducted by French, Jeffery and Murray (1999), majority of the adults increase exercise; decrease fat intake; reduce food amount, and reduce calories to lose weight.

Neumark-Sztainer, Story, Falkner, Beuhring and Resnick (1999) reported that a relatively high percentage of males ate more food or took food supplements for weight gain. Reginald et al. (2005) affirmed that increased energy or calories intake; decrease calories expenditure, adequate strength training programme; adequate rest and balanced diet are healthy means of gaining weight. People ingest anabolic steroids, increase weight training programme (Wright & Cowart, 1990), increasing the consumables that often contain high levels of carbohydrates, protein, and or calories, and number of calories ingested through diet alone are weight gain behaviours (Dummer et al., 1987a). Researchers (Grandjean, 1999; Soliah, et al., 2003; Reginald et al., 2005) identified use of prescription drugs, nutritional supplements, excessive food consumption or purposeful over-eating, and sedentary living as the potentially harmful weight-gain practices.

Reginald et al. (2005) noted that martial arts emphasizes thinness, leanness, and/or competing at the lowest possible weight. This increases the martial arts athletes including karate athletes' concern for weight control. Karate athletes take on to different practices and behaviours to get to a particular weight which they perceived to be advantageous to them during training or competition. Some of the weight control behaviours are healthful while some have deleterious effects on the individual's health. In order to properly guide the athletes on weight control, and prevent them from endangering their health due to weight control practices, there is need to find out what they do either to gain or lose weight. To achieve this, the study explored Rivers state karate athletes since no empirical study has been conducted on these athletes concerning their weight control behaviours. The purpose of the study therefore was to find out the demographic pattern of weight control behaviours of Rivers state karate athletes.

### Research Questions

1. What is the pattern of weight gain behaviours among Rivers state karate athletes?
2. What is the pattern of weight loss behaviours among the athletes?
3. What is the pattern of weight control behaviours of the athletes based on gender?
4. What is the pattern of weight control behaviours of the athletes based on age?
5. What is the pattern of weight control behaviours of the athletes based on years of sporting experience?

### Research Hypotheses

The following hypotheses were tested at .05 alpha level.

1. Gender has no significant influence on the pattern of weight gain behaviours of karate athletes .
2. Gender has no significant influence on the pattern of weight loss behaviours of karate athletes.
3. Age has no significant influence on the pattern of weight gain behaviours of karate athletes.
4. Age has no significant influence on the pattern of weight loss behaviours of karate athletes.
5. Years of sporting experience has no significant influence on the pattern of weight gain behaviours of karate athletes.
6. Years of sporting experience has no significant influence on the pattern of weight loss behaviours of karate athletes.

### Material and Method

A descriptive survey design was adopted for the study since it records and reports events as they occur in their natural setting at a particular time. The population for the study was the entire Rivers state karate athletes. A sample size of eighteen karate athletes was used for the study. Purposive sampling technique and convenience sampling technique were used to select the participants who were camped for training in University of Port Harcourt for Kaduna 2009 National Sports Festival by Rivers State government.

A 20-item structured questionnaire with dichotomous response options of "Yes" and "No" was the instrument used for data collection. The face and content validity of the instrument was established through constructive criticisms and observations by three experts in the fields of Human Kinetics and Health Education, Medicine, and Measurement and Evaluation. The experts' comments were used to improve the quality of the questionnaire before its administration to the athletes.

Ten copies of the instrument were administered to Imo state karate athletes for its reliability testing. Split-half method was employed. Hence, the copies of the questionnaire were divided into even and odd-numbered copies and the responses of the two halves were correlated. Consequently, co-efficient of 0.74 was calculated using Pearson product moment correlation in conjunction with Spearman-Brown prophecy statistic. Hence, the instrument was considered reliable for the study.

The karate athletes were camped in University of Port Harcourt in preparation for the 2009 Kaduna state National Sports Festival by Rivers State Government. The co-operation of the athletes was solicited through the karate coach. Eighteen copies of the questionnaire were administered to the subjects at the end of their training session. The next day, after the training session, all the copies of the questionnaire administered were returned yielding a 100 per cent return rate. Descriptive statistics of percentage and inferential statistics of chi-square were used to analyze the data. For easy understanding, the analyzed data were presented in tables and reported accordingly.

**Results**

**Table 1: Pattern of weight gain behaviours of karate athletes.**

Behaviours	Yes		No	
	f	%	f	%
1 Increased consumption of calories	10	55.6	8	44.4
2 Increased fluid intake	12	66.7	6	33.3
3 Participating in weight training/exercise programme	14	77.8	4	22.2
4 Adequate rest	3	16.7	15	83.3
5 Balanced diet	6	33.3	12	66.7
6 Decreased expenditure of calories	13	72.2	5	27.8
7 Use of drugs	3	16.7	15	83.3
8 Use of nutritional supplements	4	22.2	14	77.8
9 Excessive consumption of food	16	88.9	2	11.1

Table 1 reveals that majority of the karate athletes participate in weight training/exercise programme (77.8%), decreased their expenditure of calories (72.2%), increased their fluid intake (66.7%), and increased their consumption of calories (55.6%) in order to gain weight. Meanwhile, 16.7% and 33.3% of the athletes had adequate rest, and eat balanced diet, respectively, to gain weight. The table shows that majority (88.9%) of the participants eat excess food to gain weight. The table also shows that 22.2% of the karate athletes use nutritional supplements, and 16.7% of them use drugs to gain weight.

**Table 2: Pattern of weight loss behaviours of karate athletes.**

Behaviours	Yes		No	
	f	%	f	%
1 Decrease consumption of calories	12	66.7	6	33.3
2 Increase expenditure of calories through exercise	14	77.8	4	22.2
3 Food restriction	15	83.3	3	16.7
4 Over-exercising	12	66.7	6	33.3
5 Use of drugs	1	5.6	17	94.4
6 Use of nutritional supplements	2	11.1	16	88.9
7 Voluntary fluid reduction or dehydration	15	83.3	3	16.7
8 Use of steam baths or sauna	0	0.0	18	100.0

Data in table 2 show that majority of the athletes decreased their consumption of calories (66.7%) in attempt to lose weight. In addition, majority (77.8%) of the respondents increased their expenditure of calories through exercise as a way of losing weight. Among the athletes as could be seen in the table, majority of them affirmed that they restrict food intake, and voluntarily reduced fluid intake (83.3%), respectively, and over-exercise (66.7%) to lose weight. Data in the table reveal that 5.6% of the participants use drugs, while none of them use steam baths or sauna to lose weight.

**Table 3: Pattern of weight control behaviours of karate athletes based on gender.**

Items	Male (n = 12)				Female (n = 6)				$\chi^2$ cal
	Weight Gain Behaviours								
	Yes		No		Yes		No		
	f	%	f	%	f	%	f	%	
1 Increased consumption of calories	8	66.7	4	33.3	2	33.3	4	66.7	0.250
2 Increased fluid intake	9	75.0	3	25.0	3	50.0	3	50.0	
3 Participating in weight training/exercise programme	11	91.7	1	8.3	3	50.0	3	50.0	
4 Adequate rest	2	16.7	10	83.3	1	16.7	5	83.3	
5 Balanced diet	4	33.3	8	66.7	2	33.3	4	66.7	
6 Decreased expenditure of calories	10	83.3	2	16.7	3	50.0	3	50.0	
7 Use of drugs	3	25.0	9	75.0	0	0.0	6	100.0	

8	Use of nutritional supplements	3	25.0	9	75.0	1	16.7	5	83.3	
9	Excessive consumption of food	12	100.0	0	0.0	4	66.7	2	33.3	
	Cluster %		57.41		42.59		35.19		64.81	
			Weight Loss Behaviours							
	Items		Yes		No		Yes		No	
		f	%	f	%	f	%	f	%	
10	Decrease consumption of calories	6	50.0	6	50.0	6	100.0	0	0.0	
11	Increase expenditure of calories through exercise	9	75.0	3	25.0	5	83.3	1	16.7	
12	Food restriction	9	75.0	3	25.0	6	100.0	0	0.0	
13	Over-exercising	6	50.0	6	50.0	6	100.0	0	0.0	
14	Use of drugs	0	0.0	12	100.0	1	16.7	5	83.3	
15	Use of nutritional supplements	0	0.0	12	100.0	2	33.3	4	66.7	
16	Voluntary fluid reduction or dehydration	9	75.0	3	25.0	6	100.0	0	0.0	
17	Use of steam baths or sauna	0	0.0	12	100.0	0	0.00	6	100.0	
	Cluster %		40.63		59.37		66.66		33.34	

$\chi^2$  tab. = 3.841; df = 1; p < .05

Table 3 shows that greater percentage of male athletes engage in increased consumption of calories (66.7%), increased fluid intake (75.0%), participate in weight training/exercise programme (91.7%), decreased expenditure of calories (83.3%), and consume excessive food (100.0%) to gain weight than their female counterparts. Generally, the table shows that higher proportion of the male athletes (57.41%) engages in weight gain behaviours than the female karate athletes (35.19%). On the weight loss, higher proportion of female karate athletes engage in decrease consumption of calories (100.0%), increase expenditure of calories through exercise (83.3%), restriction of food (100.0%), over-exercise (100.0%), and dehydrate (100.0%) to lose weight. The table revealed that higher percentage of female karate athletes (66.66%) engages in weight loss behaviours than their male counterparts (40.63%). It was concluded that gender has no significant influence on the pattern of weight gain behaviours, and weight loss behaviours ( $\chi^2$  cal. = 0.250 <  $\chi^2$  tab. = 3.841; df = 1; p < .05, respectively) of the karate athletes.

**Table 4: Pattern of weight control behaviours of karate athletes based on age.**

Items	< 25 years (n = 8)				≥ 25 years (n = 10)				$\chi^2$ cal	
	Weight Gain Behaviours				Weight Loss Behaviours					
	Yes		No		Yes		No			
	f	%	f	%	f	%	f	%		
1	Increased consumption of calories	3	37.5	5	62.5	7	70.0	3	30.0	0.226
2	Increased fluid intake	4	50.0	4	50.0	8	80.0	2	20.0	
3	Participating in weight training/exercise programme	4	50.0	4	50.0	10	100.0	0	0.0	
4	Adequate rest	1	12.5	7	87.5	2	20.0	8	80.0	
5	Balanced diet	2	25.0	6	75.0	4	40.0	6	60.0	
6	Decreased expenditure of calories	3	37.5	5	62.5	10	100.0	0	0.0	
7	Use of drugs	1	12.5	7	87.5	2	20.0	8	80.0	
8	Use of nutritional supplements	1	12.5	7	87.5	3	30.0	7	70.0	
9	Excessive consumption of food	6	75.0	2	25.0	10	100.0	0	0.0	
	Cluster %		34.78		65.22		62.22		37.78	
			Weight Loss Behaviours							
	Items		Yes		No		Yes		No	
		f	%	f	%	f	%	f	%	
10	Decrease consumption of calories	4	50.0	4	50.0	8	80.0	2	20.0	0.226
11	Increase expenditure of calories through exercise	5	62.5	3	37.5	9	90.0	1	10.0	
12	Food restriction	5	62.5	3	37.5	10	100.0	0	0.0	
13	Over-exercising	4	50.0	4	50.0	8	80.0	2	20.0	
14	Use of drugs	0	0.0	8	100.0	1	10.0	9	90.0	
15	Use of nutritional supplements	1	12.5	7	87.5	1	10.0	9	90.0	
16	Voluntary fluid reduction or dehydration	5	62.5	3	37.5	10	100.0	0	0.00	
17	Use of steam baths or sauna	0	0.0	8	100.0	0	0.0	10	100.0	
	Cluster %		37.5		62.5		58.75		41.25	

$\chi^2$  tab. = 3.841; df = 1; p < .05

Data in table 4 revealed that greater percentage of the athletes aged 25 years and above (62.22%) engage in weight gain behaviours than their counterparts who are less than 25 years (34.78%). It is also evident in the table that higher proportion of athletes who are 25 years and above (58.75%) engages in weight loss behaviours compared to their counterparts who are less than 25 years old. Above all, age has no significant influence on the pattern of weight gain behaviours, and weight loss behaviours ( $\chi^2$  cal. = 0.226 <  $\chi^2$  tab. = 3.841, df = 1, p < .05, respectively) of the karate athletes.

**Table 5: Pattern of weight control behaviours of karate athletes based on years of sporting experience.**

Items	< 2 years (n = 4)				≥ 2 years (n = 14)				$\chi^2$ cal
	Weight Gain Behaviours								
	Yes		No		Yes		No		
	f	%	f	%	f	%	f	%	
1 Increased consumption of calories	2	50.0	2	50.0	8	57.1	6	42.9	0.322
2 Increased fluid intake	3	75.0	1	25.0	9	64.3	5	35.7	
3 Participating in weight training/exercise programme	3	75.0	1	25.0	11	78.6	3	21.4	
4 Adequate rest	1	25.0	3	75.0	2	14.3	12	85.7	
5 Balanced diet	2	50.0	2	50.0	4	28.6	10	71.4	
6 Decreased expenditure of calories	3	75.0	1	25.0	10	71.4	4	28.6	
7 Use of drugs	1	25.0	3	75.0	2	14.3	12	85.7	
8 Use of nutritional supplements	1	25.0	3	75.0	3	21.4	11	78.6	
9 Excessive consumption of food	4	100.0	0	0.0	12	85.7	2	14.3	
Cluster %		55.56		44.44		48.41		51.59	
	Weight Loss Behaviours								$\chi^2$ cal
	Yes		No		Yes		No		
	f	%	f	%	f	%	f	%	
10 Decrease consumption of calories	3	75.0	1	25.0	9	64.3	5	35.7	0.322
11 Increase expenditure of calories through exercise	3	75.0	1	25.0	11	78.6	3	21.4	
12 Food restriction	4	100.0	0	0.0	11	78.6	3	21.4	
13 Over-exercising	3	75.0	1	25.0	9	64.3	5	35.7	
14 Use of drugs	0	0.0	4	100.0	1	7.1	13	92.9	
15 Use of nutritional supplements	1	25.0	3	75.0	1	7.1	13	92.9	
16 Voluntary fluid reduction or dehydration	3	75.0	1	25.0	12	85.7	2	14.3	
17 Use of steam baths or sauna	0	0.0	4	100.0	0	0.0	14	100.0	
Cluster %		53.13		46.87		48.21		51.79	

$\chi^2$  tab. = 3.841; df = 1; p < .05

From the data in table 5, greater proportion of the athletes with less than 2 years of sporting experience (55.56%) engages in weight gain behaviours than karate athletes with 2 years and above as their years of sporting experience (48.41%). The table equally revealed that majority of the athletes with less than 2 years of sporting experience (53.13%) engage in weight loss behaviours than athletes with 2 years and above as their years of sporting experience (48.21%). In addition, years of sporting experience has no significant influence on the pattern of weight gain behaviours, and weight loss behaviours ( $\chi^2$  cal. = 0.322 <  $\chi^2$  tab. = 3.841, df = 1, p < .05, respectively) of karate athletes in Rivers state.

**Discussion**

The finding that most of the weight gain behaviours (e.g. increase consumption of calories, participating in weight training/exercise programme, increase fluid intake, decrease expenditure of calories) of the athletes are healthy was in agreement with Neumark-Sztainer, et al. (2002). According to them, the use of healthy weight control behaviours was commonly reported. The finding that high percentage of the athletes participating in weight training/exercise programme to lose weight was in agreement with Serdula et al. (1993), and White et al. (1997) who reported use of exercise as a weight loss measure adopted by men and women. The finding that greater percentage of the participants restricts food was supported by White et al. (1997). According to them, men and women diet and vomit to lose weight. The finding was in concordance with French, Jeffery and Murray (1999) report that majority of the adults increase exercise, decrease fat intake, reduce food amount and reduce calories to lose weight.

Gender having no significant influence on the weight gain behaviours, and weight loss behaviours of the athletes was in agreement with reports of White et al. (1997) that there was no difference by sex category in the frequency of weight control methods. However, the finding was in disagreement with Spelke's (1997) result that there was a significant relationship between the weight-control behaviours of student athletes and sex of the athletes. Considering weight loss behaviours and gender, the finding was in disagreement with Serdula et al. (1993) who conducted a study on adults and found that gender differences exist in weight-loss methods of adolescents. This is supported by Spelke's (1997) finding that females are losing weight with greater frequency. Gender not having significant influence on the weight control behaviours of the athletes was not in any way a surprise because athletes' goal is to excel in their sport and if gaining or losing weight will give them the advantage, they will indulge in the weight control behaviours irrespective of gender.

Supporting the finding that age has no significant influence on the weight gain behaviours, and weight loss behaviours of the athletes was the finding by White et al. (1997) that there was no difference by age

category in the frequency of weight control methods. Again, Neumark-Sztainer et al. (2002) reported that weight control/disordered eating behaviours were not associated with age. Both young and old athletes want to be within the expected weight range of their sport in order to compete and excel, thereby making them to engage in all sorts of weight control behaviours. The finding that years of sporting experience has no significant influence on the weight gain behaviours, and weight loss behaviours of the athletes was expected. This is because irrespective of karate athlete's number of years of sporting experience, for him or her to feature in any competition, he or she still has weight requirement to fulfill.

## Conclusion

It was concluded that karate athletes engage in both healthful and unhealthful weight gain behaviours. The athletes practice healthful and unhealthful weight loss behaviours. Gender, age and years of sporting experience had no significant influence on the weight gain behaviours, and weight loss behaviours of karate athletes.

## Recommendations

1. There should be public enlightenment campaign on weight control with emphasis on the healthy weight gain and weight loss behaviours. This will help in sensitizing the athletes, parents, guardians, and other social support groups on weight control.
2. An intervention programme should be designed and mounted for karate athletes who are using unhealthy weight control behaviours
3. Rivers state government should employ dieticians/ nutritionists and medical doctors into the karate team to assist the coaches in regular check of the weight of the athletes.
4. Karate athletes should be educated on the dangers of unhealthy weight control behaviours.
5. There should be regular assessment of the weight control behaviours of the athletes. This can be done using questionnaires, conducting interviews, focus group discussion and other interactive sessions with the athletes.
6. Mass media and other institutions should assist in discouraging unhealthy weight control approaches of people especially karate athletes.

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