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Effect of diet and nutrition on performance of female swimmers

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Abstract
The purpose of the present study is to observe effect of diet and nutrition on performance of female swimmers. The present study was conducted on female swimmers subjects of 18-27 years of age. The random sample procedure was used to select physically fit swimmers. The subjects were divided into experimental and control group by drawing lots. Each group consisted of 6 swimmers. Pre- test and post-test were conducted to assess the effect of proper nutrition and diet on performance of swimmers. The experimental group was given proper diet and nutrition for 20days along with training. The 2 training sessions of 2 hours each were given to each group in the morning and evening respectively. The test was done on the basis of experimental research in which two groups was selected i.e. - experimental and control groups. The treatment was given in form of balanced diet chart prepared to improve their performance. Before giving the treatment the pre score was taken in which the timings of 100 mts. Freestyle sprint was recorded of both the groups. After 20 days the post score was recorded of both the groups of same event and there timings were compared by applying dependent t-test.

Keywords: Performance, balanced diet, freestyle sprint

Introduction
A proper nutritious diet should include right mixtures of all the elements including vitamins, minerals, carbohydrates, proteins, and fats. A balanced diet must provide carbohydrates for energy, vitamins and minerals to maintain the health of your skeletal system and vital organs and essential fats and proteins. Vitamins and minerals are found in a number of foods but because of the physical demands of swimming you may need to include supplements in your diet to avoid vitamin and mineral deficiency. Eating the right diet for a race is as important as training. Swimming is a demanding sport with a high energy requirement. A swimmer in a period of heavy training needs to consume enough calories to fuel training and eat a variety of foods to meet his need for nutrients to help recover from the demands of the sport. Nutrition is the most important influence on sports performance. To reach one's highest potential, all of the body's systems must be working optimally. The best way to achieve this is to eat a variety of nutritious foods**.** Calories, carbohydrate, protein, fat, vitamins, minerals and fluids all play a unique and crucial role.
It is important to realize that there are no magical nutrition remedies to develop and instill a balanced diet. It is important that swimmers eat a variety of wholesome foods from the four food groups – milk, meat, fruits and vegetables, and breads and cereals. As a competitive swimmer, ideal diet should include the following percentage of calories: 55% to 65% carbohydrates, 20% to 30% fats and 10% to 15% proteins. A swimmer must take the best care of his body for the best performance. This nutrition information is to help understand good nutrition and to provide guidelines for competitive swimmer at four major times of the training season. These time periods are:

Nutrition during Training: The training time is the period of time that is most critical since most of the athlete's time is spent here. The average daily time spent in training can vary tremendously and it is possible for some swimmers to be training as much as 4-6 hours a day which will burn 2500 to 4000 calories. Therefore, a diet high in carbohydrates is very important and critical to optimal training. A high carbohydrate diet will replenish the lost calories from hard training. A swimmer can minimize depletion of energy stores by consuming high carbohydrate foods and/or drinks in the first 30 min following a workout.

Pre-Event Nutrition: The pre-event diet has a major purpose, which is to provide sufficient energy and fluid for the athlete. A high carbohydrate diet with plenty of fluids should be emphasized 2 to 3 days before competition. The pre-event meal should be eaten three to four hours before the event and should include a light high carbohydrate meal.

Nutrition during Competition: Nutrition during competition is dependent on nutrition during the training times of day to day life. For competition that covers a 3 to 4 day period, swimmer should consume plenty of fluids and each meal should include high carbohydrate, low fat selections.

Nutrition after Competition: High intensity work as during competition will deplete the muscles energy supplies. To make sure energy stores are maintained, carbohydrates play an important role after competition. Small amounts of protein within a thirty minute window will also help rebuild muscle tissue.

Materials and Methods

The objective of the test was to study the increase in performance by the intake of healthy and proper diet and nutrition.

Stopwatch: An instrument used to measure the work done within a certain time period. The subjects were asked to swim 100 mts sprint and their time (in seconds) was recorded.
The following diet was given to male and female swimmers:

Diet for Female Swimmer

Time	Food Item	Quantity	Weight	Calories (cal)	Protein (g)	Carbohydrate (g)	Total fat (g)
Before training (morning) 5:00am	Banana	1	100gms	116	-	28	-
During training (5:30am-7:30am)	Banana	½	50gms	58	-	14	-
After training (7:45am)	Chana	1 bowl	135 gms	109			
	Apple	1	75gms	44	-	10	-
Breakfast (8:15am)	Milk	2 cup	500ml	340	16	24	10
	Banana	2	200gms	232	-	56	-
	Almonds		8gms	53	1.7	0.8	5
	Eggs	3	159gms	291	21	-	21.0
	White oats (some-time)		24gms	90	2.7	15	1.8
Lunch (1:00pm)	Chapatti	2	70gms	170			
	Dal	1 Bowl	29gms	101	7	17	0.4
	Aaloo Beans		100 gms	134	2.4	34.3	8.7
Before training (evening) (4:00pm)	Fruit (banana/ apple)	Any					
During Training (4:30pm-6:30pm)	Plain water/ lemon water						
After training (6:45pm)	Fruit salad/ Fruit juice	1 bowl	175gms	160		38	
			90gms	40		10	
Dinner (8:00pm)	Fish / Meat/ Chicken (non-veg)		200gms	288			
	Mutter paneer (veg)	1 bowl	150gms	220	12.5	16.05	12.15
	Rice	1 bowl		66	1.3	15	
	Chapatti	1	35gms	85			
After dinner (9:15pm)	Milk	2 cup	500ml	340	16	24	10

Table 1: Compressed Data of Swimmers Experimental Group (Group-I)

Subjects	Timings	
	Pre Test	Post Test
1.	1:04:23	1:02:22
2.	1:03:17	1:01:01
3.	1:04:37	1:02:01
4.	1:02:09	00:59:04
5.	1:09:02	1:07:36
6.	1:09:24	1:07:17

Table 2: Control Group (Group-II)

Subjects	Timings	
	Pre Test	Post Test
7.	1:05:19	1:04:17
8.	1:03:27	1:03:22
9.	1:09:08	1:08:00
10.	1:04:23	1:03:19
11.	1:02:17	1:01:05
12.	1:01:36	1:01:19

Table 3: T-Values of the Group I & Group II

Event	Experimental Group	Control Group
100 mts Free Style	6.13*	0.29

Conclusion

After applying the t-test on all the timings of 100 mts, the t-value of the experimental and control groups are present in table-3.The pre-test and post-test difference in the experimental and control groups have been found to be significant. However, this improvement is not found in control group. This research provides the basis to emphasize the role of aerobic training on the anthropometry, vital capacity and rest pulse rate. Due to the diet given to the experimental group the performance is improved. This research provides the basis to emphasize the Diet and nutrition programme on swimmers for the betterment of their performance.

Practical Application

In the light of the findings of the study the researcher would like to recommend that a similar study can be practically applied to athletes of different games other than those

employed in this study and can also be conducted on international swimmers. A similar study can also be done on male swimmers and also for a long time period.

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