

Effect of Nutrition Planning for Development of Aerobic Endurance among Long Distance Runner of Kurnool District Andhra Pradesh

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ABSTRACT

The purpose of the present study is to find out the effect of Nutritional Planning for development of Aerobic Endurance among Men long distance runners. The sample for the present study consists of N=30 randomly selected Subjected aged 18-21 years male long-distance runners of Kurnool District Athletics Association of which N=15 are experimental group (long distance runner) and N=15 is controlled group. Experimental Group go for the specific Nutrition Diet for 8 weeks for performance improvement and controlled group will continue their regular diet. Pre-Test and Post Test were conducted on Cooper 12minute walk/ Run Test to measure the Aerobic Endurance among experimental group and controlled group. This study shows that due to the specific nutrition diet plan there is an improvement of experimental group in the Aerobic Endurance and the controlled group is decreased in performance of aerobic Endurance. It is concluded that due to Specific Nutrition food, there will be improvement in Aerobic Endurance among men long distance runner.

1 Introduction

Kathryn L Beck,¹ Jasmine S Thomson,² Richard J Swift,¹ and Pamela R von Hurst¹ (2015) Study was A number of factors contribute to success in sport, and diet is a key component. An athlete's dietary requirements depend on several aspects, including the sport, the athlete's goals, the environment, and practical issues. The importance of individualized dietary advice has been increasingly recognized, including day-to-day dietary advice and specific advice before, during, and after training and/or competition. Athletes use a range of dietary strategies to improve performance, with maximizing glycogen stores a key strategy for many. Carbohydrate intake during exercise maintains high levels of carbohydrate oxidation, prevents hypoglycaemia, and has a positive effect on the central nervous system. Recent research has focused on athletes training with low carbohydrate availability to enhance metabolic adaptations, but whether this leads to an

improvement in performance is unclear. The benefits of protein intake throughout the day following exercise are now well recognized. Athletes should aim to maintain adequate levels of hydration, and they should minimize fluid losses during exercise to no more than 2% of their body weight. Supplement use is widespread in athletes, with recent interest in the beneficial effects of nitrate, beta-alanine, and vitamin D on performance. However, an unregulated supplement industry and inadvertent contamination of supplements with banned substances increases the risk of a positive doping result. Although the availability of nutrition information for athletes varies, athletes will benefit from the advice of a registered dietician or nutritionist.

Williamson, E.2016 Nutritional study was examining the various nutritional challenges which athletes encounter in preparing for and participating in ultra-endurance walking and running events. Special attention is paid to

energy level, performance, and recovery within the context of athletes' intake of carbohydrate, protein, fat, and various vitamins and minerals. It outlines, by way of a review of literature, those factors which promote optimal performance for the ultra-endurance athlete and provides recommendations from multiple researchers concerned with the nutrition and performance of ultra-endurance athletes. Despite the availability of some research about the subject, there is a paucity of longitudinal material which examines athletes by nature and type of ultra-endurance event, gender, age, race, and unique physiological characteristics. Optimal nutrition results in a decreased risk of energy depletion, better performance, and quicker full-recovery.

Trent Stellingwerff Ingvill Måkestad Bovim Jamie (2019) study was Whitfield Middle-distance runners utilize the full continuum of energy systems throughout training, and given the infinite competition tactical scenarios, this event group is highly complex from a performance intervention point of view. However, this complexity results in numerous potential periodized nutrition interventions to optimize middle-distance training adaptation and competition performance. Middle-distance race intensity is extreme, with 800- to 5,000-m races being at ~95% to 130% of VO₂max. Accordingly, elite middle-distance runners have primarily Type IIa/Ix fiber morphology and rely almost exclusively on carbohydrate (primarily muscle glycogen) metabolic pathways for producing adenosine triphosphate. Consequently, the principle nutritional interventions that should be emphasized are those that optimize muscle glycogen contents to support high glycolytic flux (resulting in very high lactate values, of >20 mmol/L in some athletes) with appropriate

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buffering capabilities, while optimizing power to weight ratios, all in a macro- and micro-periodized manner. From youth to elite level, middle-distance athletes have arduous racing schedules (10–25 races/year), coupled with excessive global travel, which can take a physical and emotional toll. Accordingly, proactive and integrated nutrition planning can have a profound recovery effect over a long race season, as well as optimizing recovery during rounds of championship racing. Finally, with evidence-based implementation and an appropriate risk/reward assessment, several ergogenic aids may have an adaptive and/or performance-enhancing effect in the middle-distance athlete. Given that elite middle-distance athletes undertake ~400 to 800 training sessions with 10–25 races/year, there are countless opportunities to implement various periodized acute and chronic nutrition-based interventions to optimize performance.

2 Methodology

The top N=30 Long Distance Runners range from age group 18-21 years were selected randomly, after the selection of the subjects according to the aim of our research programmed the subjects divided in to the two groups, Experimental group N=15 (Long Distance Runner) and N=15 Controlled group the criteria of selection basis on their Achievement at different level state, inter University of Kurnool District. Before the Nutritional Plan begun explained the schedule Of Nutrients Food.

2.1 The Importance of Nutrition

The importance of using raw materials for your body for muscle growth cannot be stressed enough, and I suggest that you learn about proper nutrition first as a beginner.

Believe it or not, this is the most important factor for muscle growth. Without proper nutrition, supplements and hydration you will gain little or no benefit and leave yourself very frustrated and mostly because you will not see any benefit. The importance of using raw materials for your body for muscle growth cannot be stressed enough, and I suggest that

All About Protein:

Proteins are the actual building blocks of muscle tissue made up of various amino acids. Protein builds, repairs and maintains your muscles, and is very important for a athlete because frequent intense weight lifting puts so much demand on your body. To achieve maximum growth, a wide range of amino acids must be consumed daily. There are 20 amino acids, and the human body naturally produces

Various sources:

The system of ranking different sources of protein is called biological value (BV). As high as BV is, protein is rapidly absorbed into the body and is used up. Here are the best sources of protein and their BV:

Buttermilk– This protein is the best source of protein from milk. Note that with a maximum of 157 BV, usually BV cannot exceed 100, but keep this amount in mind, this protein is absorbed the fastest and most efficiently. Found in powder form and mixed with milk or water.

Egg – Before buttermilk was sold, the old-fashioned egg was the leading source of protein, with a maximum of 100 VV. Was. The reason is that there is a perfect animal inside the

you learn about proper nutrition first as a beginner. So, are you ready Good?

First, you must understand that there are three macro nutrients associated with Athletes

- Protein
- Fat
- Carbohydrates

12 of them, but others, called “essential amino acids”, can only be obtained through food. You need to get a good protein intake to make sure you grow, but many teens will take their protein intake to absolutely unavoidable amounts, and this is a problem that needs to be addressed. Excessive protein intake has a detrimental effect on both the kidneys and the liver and the human body burns valuable proteins for energy release. Keep your protein intake to an ideal amount based on your body weight, no need to overdo it.

egg. And I realize that some athletes avoid this source because they don’t like the taste of eggs every day, but it’s almost perfect and very convenient to use because it can be eaten in many styles, and even drunk. You can also buy egg protein in powder form. This yolk can be bad for you if eaten in large quantities, I would not recommend eating more than four per day.

Milk – This protein is a mixture of casein and whey has a maximum of 91 by. Buttermilk works quickly and provides you with protein quickly and casein in milk develops slowly, which is why many athletes drink milk before they go. Bed. A very convenient source, and can be added to whey shakes to get a few slow developing proteins. Casein supplements are also made in powder form.

Meat – Meat, tuna and chicken are all excellent sources of protein, with maximum BV. In addition, meat contains creatine, which produces energy for the muscles in the bloodstream, rather than converting it to phosphocreatine, which supplies the muscles. ATP (in other words, energy release to help your workout, we'll discuss this in more detail later).

All About Carbohydrates:

Carbohydrates are the body's easiest source of energy, fuelling muscle building and other life processes while preserving the proteins you use for muscle growth. But be careful, any unused carbohydrates can easily be stored as body fat, so the time of consumption will determine whether it will be stored as fat or not. The trick is to consume enough carbs to keep your body away from the ketonic state (using protein for protein). Ketosis is not a desired condition to live in, as it will eventually lead your body to use muscle tissue for muscle relaxation, which is obviously not good. A good rule of thumb is to consume 2 servings of carbohydrates for every gram of protein you consume. Also, get a wide range of both simple and complex, and use two resources to their advantage.

Various sources:

There are two different sources of carbohydrates that we are concerned about:

Simple – This is the fastest acting source, and provides fast energy release to the body. Some common sources are fruits, fruit juices and sugar.

Complex – This is a source of slow acting and gives you long term energy release. Some common sources are pasta, bread, rice and oatmeal.

All about fat: Contrary to popular belief, fat is essential for building muscle mass and helps your body function properly. Fat is a source of stored energy for the body, protects the internal organs and acts as an insulator to keep the human body warm.

Various sources: There are two types of fats:

Saturated – Stay away from these fats as much as possible, they are commonly found in beef. Keep the amount of saturated fat to a minimum.

Unsaturated – These fats are stored for energy and really help build muscle. Almost every diet has some unsaturated fats.

Now that you know the basics, and hopefully I've dispelled some common myths about Athletes like "you can never get too much protein". The rest of this section is about other important nutritional aspects of a successful athletes

Calories:

One calorie, by definition, is a unit of the probability of producing energy, which is equal to the amount of heat contained in food and released by the body upon oxidation. Simply put, calories provide energy for life processes. Both protein and carbohydrates have 4 calories per gram, and fat 9. As you can see, fat is one of the most important nutrients in calories. To find out how many calories are enough for you to gain muscle, take your body weight and multiply it by 24, but make sure you have the right balance of macro-nutrients to see if you can't get excess fat.

Meal frequency:

Make sure you eat every 2-3 hours to keep your body in an anabolic (muscle building) state. This can be very difficult, but if you are

dedicated to the cause of success, you will make time for your meals, even if it means pre-packaging them.

2.2 Diet for the workout, pre and post purposes:

Post-workout is the most important meal of the day for the long-distance runner, which comes the second workout. After a workout, your body's energy stores are used up, and your body needs protein a.s.a.p. You need both fast-acting energy and fast-acting protein and carbs. The answer, simple carbo, and whey protein. To effectively enhance the muscle-building process, I recommend having a protein-carb ratio of 1-3. I personally serve meal replacement powder and over 8 oz. Glass O.J. (Fast acting simple carbohydrates). Now for a pre-workout, it will determine which meals you have during your workout are full of energy, or lazy and tired. For this meal, I recommend having both simple and complex carbs, and again a protein-carb ratio of 1-3-. Keep I work this one hour just to not feel sick.

General nutrition to support long-distance running

In general, as distance and walking time increase, so do the need for calories and carbohydrates. A high carbohydrate diet helps maintain essential glycogen stores within the muscles, which are the primary energy source used during exercise. For those who regularly complete extended runs or strenuous exercise, as well as long-distance event trainers such as marathons, a diet consisting of 55 to 65 percent carbohydrates is recommended to maintain optimal glycogen stores. Carbohydrates can be found in a variety of foods such as whole grains and fruits.

Carbohydrates are not only considered for high mileage clients. These individuals should also follow a diet rich in fruits and vegetables, which includes antioxidants, vitamins, and minerals to prevent the risk of free radicals and mineral deficiencies. Like any ongoing and demanding fitness program, during long-distance running, daily and adequate hydration is essential.

2.3 Pre-workout nutrition for long-distance runners

Before going straight, an extra increase in carbohydrates is necessary for constant strength. Like other strenuous workouts, pre-workout meals of carbohydrates, which include protein and a little fat, should be eaten a few hours before long-distance walks.

Good options for pre-workout meals include:

- Hardboiled eggs and wheat toast
- Whole-grain crackers peanut butter and bananas
- Tomato Whole grain bagel with tomato and low-fat cheese
- Filled grilled chicken and wheat pasta

Keep in mind that high-fibre foods such as fruits and grains may not be the best choices in the long run before or in an hour or two, as they can cause gastrointestinal discomfort. People who cannot tolerate food before a long-distance race or race should choose an easily digestible source of carbs, such as bananas, energy gels, or sports drinks.

2.4 Post-workout nutrition for long-distance running

Once the long-distance stakes are completed, proper nutrition is important for the next race to begin rebuilding nutrition stores. Immediately

after the long-distance walk, customers should take a sports drink, orange juice, or a similar drink to start rehydrating and refilling, and then focus on the meal after the workout. As with pre-workout meals, long-distance meals should contain moderate to high amounts of carbohydrates attached to a protein (the recommended ratio is about 3: 1). This combination of carbohydrates and proteins has been shown to be ideal for replenishing glycogen stores in preparation for the next training session. Some research suggests that focusing on complex carbohydrates in the 48 hours after a particularly strenuous race or race, such as a marathon, maybe the most beneficial for building glycogen stores. In addition,

runners should make sure to hydrate slowly during the day.

It doesn't matter what your client's training program or goals are, nutrition is essential to supporting success. Guiding your customers with an effective meal plan for long-distance walks, rich in carbohydrates, proteins, vitamins, and minerals, can not only help them reach their goals but also make all the difference in the satisfaction of the program.

The below diet chart for long distance runner followed under the guidance of Nutrition and health, which help author to carry out research

	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Pre-workout	Oatmeal with coconut milk 16 oz of water	Whole grain bread with almond butter 16 oz of water	Whole grain bread with almond butter 16 oz of water	Whole grain bread with almond butter 16 oz of water	Whole grain bread with almond butter 16 oz of water	Whole grain bread with almond butter 16 oz of water	No workout in the morning will be travelling
Breakfast	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water	Green smoothie with Tea/Coffee ½ litre of water
Lunch	Chicken with sweet potatoes ½ litre of water	Chicken with rice and steamed veggies ½ litre of water	Chicken wrap (2x) ½ litre of water	Chicken with vegetable (2x) ½ litre of water	Chicken with rice and steamed veggies ½ litre of water	Chicken with sweet potatoes ½ litre of water	Healthy choice at restaurant on our way to dc ½ litre of water
Snack	Apple slices ½	Apple slices ½	Orange ½ litre of water	Banana ½ litre of water	Apple ½ litre of water	Orange ½ litre of water	Banana ½ litre of water

	litre of water	litre of water					
Dinner	Chicken with sweet potatoes ½ litre of water	Chicken with quinoa and chapati veggies ½ litre of water	Chicken wrap (2x) ½ litre of water	Chicken wrap (2x) ½ litre of water	Chicken with rice and chapati veggies ½ litre of water	Chicken with sweet potatoes ½ litre of water	Healthy choice at restaurant on our way to dc ½ litre of water

3 Assessment of Performance

The Experimental group was engaged with an intervention based on Specific Nutrients food, which was employed for 8 weeks. At the same time, the controlled group engaged in regular diet, they were tested on Cooper Test before the intervention and the performance Variable were retested again after the 8-week intervention programmed.

Tools

Cooper 12-minute tests walk and Run test. The test design by Kenneth H. Cooper in the year 1968

Purpose: to measure the Vo2 max/ Endurance capacity

Equipment Required: Measurement tape to measure and mark the distance, Whistle to start and cones for visible marking. most important is stop watch to record the performance

Procedure The test Requires the athlete to run as far as possible in 12 minutes.1 the athlete

T-Test

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
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worm up for the 10 minutes.2the assistant give commons “GO”, starts the stop watch, and the athlete commences the test .3 the assistant keeps the athlete inform the remaining time at the end of each lap (400m).4the assistant blows the whistle when the 12 minutes have elapsed and re3cords the distance the athletic covered to the nearest 10 meters

This test conducted to Experimental group and Controlled Group Pre-test and Post-test to know the Improvement in the aerobic endurance capacity after given the nutrients food, to Experimental Groups whereas Controlled Group went for regular diet.

4 Results

The result of the study shows that due to the Specific Nutrients Food there is improvement of experimental group in the (aerobic Endurance) Cooper Test and controlled group decreases in performance in (aerobic Endurance) Cooper Test to the general diet

Control Group	Pre-Test	2263.7333	15	103.13893	26.63036
	Post Test	2258.9333	15	102.67944	26.51172
Experimental Group	Pre test	2342.2000	15	54.45601	14.06048
	Post test	2423.1333	15	77.96049	20.12931

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Control group	Pre test Post test	4.80000	18.84220	4.86504	-5.63446	15.23446	.987	14	.341
Experimental group	Pre test Post test	-80.93333	54.88360	14.17088	-111.32686	-50.53981	-5.711	14	.000

Significant P Value 0.005

The analysis of the data reveals that the subjects with the Nutrients food have shown improvement in the performance of cooper test from pre to post-test Mean S.D pre-test result shown (2342.2000) and Controlled group (2263.73) after 8 weeks of Specific Plan Diet there is Improvement in the subject's Experimental Group (2423.1333) Circuit Training, and Controlled group (2258.9333).

5 Discussion

The authors Observed not only improvement in performance, but also the athletes got recover from the long work out sessions and got less fatigue due to sufficient and specific diet for 8th weeks. Also observed that experimental group adapted the work out easily where as is seen in difficult of controlled group due to insufficient food which leads to fatigue and improper recovery from last sessions. Good diet leads to proper sleep, fast recovery, and maintain homoeostasis

6 Conclusions

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As for the practicality of this study which may applied when designing the Nutrients Diet programmed for long Distance runners, I clearly mention that Specific Diet have shown extlent effect in the improvement Aerobic Endurance. Coaches will be able to analysed the results and be able to enhance the future performances. At such feedback is very crucial for the improvement in performance athlete. I concluded the assessment process can be conducted every 3 months update the progress of players performance and to ensure that it is

up to date with the plyers training and important of Nutrients food needs requirements. It is recommended that coaches assess their player's performance on a regular basis in order to ensure better compliance with the training programme and Diet Plan. The aim of formulating the effect of Nutrients food to betterment and Enhance their performance as well as guide line for long distance runners coaches at various level in preparing and designing quality and effective Diet Plan with training programme.

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