

THE BENEFITS OF STRENGTH, CONDITIONING COMBINED
WITH NUTRITION IN TAEKWONDO

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ABSTRACT

For a long time, many Taekwondo athletes take physical practice seriously and forget to take care of their health. Training for the martial arts should be all round, nutrition and conditioning are to be prioritized and given much concentration just like body building. The thesis seeks to show that healthy diet, eating, training and conditioning will benefit the artist to a great extent as they prepare for their competitions. Improving performance of an athlete is one of the most important goal of any athlete. Nutrition is one of the major components in achieving this, as it strengthens the body of an athlete and keeps them healthy. This paper will investigate the nutrient combinations, requirements and foods required to achieve this. Beside nutrition, strength and health are very important, developing strength is very important.

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GLOSSARY

Taekwondo: This is a martial art with a Korean origin that involves head-height kick, spinning kicks, jumping and fast kicking techniques.

Martial Arts: These are systems and traditions of combat training and practice for various reasons such as self-defense, military actions and policing.

Nutrients: These are substances found in the food consumed by human beings which are important to life, health and form important repair components for the body. They are also very important in bodybuilding.

Introduction

Orient is the origin and base of martial arts, Taekwondo came from Korea around one thousand years ago. It spread all over the world and came to be accepted in the world Olympic games in Sydney Australia (2000) The World Taekwondo Federation is the international body that comes up with rules, policies and regulations that must be followed by the athletes who participate in the Olympics games. There are eight weight classes of Taekwondo. There exist various modalities in weight such as boxing, judo, rowing, karate and wrestling. Weight loss is very common when athletes are introduced into this game. These games are very involving, requires a lot of energy and water to survive in them. The athlete must take care of their body so that they can stay in good form. The study of the impact of nutrition, conditioning and training has not been investigated in depth.

To start with, evaluating the nutritional requirements by the body of a specific athlete is very essential in Taekwondo. From analysis of various foods and food groups, the study of nutrition allows us to classify nutrients, come up with strategies to modify the diets to fit into providing the nutrients an athlete needs for this kind of sport. (Gilbert, 2009) According to this author, there are various important factors that needs to be known as far as nutrition and training of an athlete remain a question to be answered; The modality of Taekwondo, how is the training conducted, training stages, the timing and schedules of the competition, how performance is measured, information about the metabolism of the body of an athlete and general health of a person.

The body uses glucose as the major source of energy where it is converted into ATP(Energy) , water and carbon (iv) oxide in aerobic and anaerobic processes. This is the main process through which energy is produced. Glucose comes from carbohydrate foods, low levels of carbohydrates in the body of a Taekwondo athlete could interfere with the physical

performance in this game. Regulated levels of carbohydrate foods is required so as to avoid negative effects caused by low levels of the same. Intake of carbohydrates favors the storage of glycogen, development of muscles and provision of energy as maybe required. (Kerksick, 2008) Carbohydrate intake makes the body strong, and protects it from any immune failures that may affect the performance of the body, state of mind and mood of Taekwondo athlete.

Optimizing Performance

To get absolute optimum performance, the Taekwondo athletes must follow some strip measures in and during training. The trainings always push the body, the mind to their limits. Taekwondo is anaerobic sport and aerobic processes being involved to some significant levels. The movements during Taekwondo are basically anaerobic reactions while the whole combat that lasts almost three hours involves aerobic process. This requires heavy respiratory activity to take up oxygen to cater for the oxygen debt during the anaerobic reactions. Therefore, one of the best practices that can help achieve maximum performance during a Taekwondo combat is heavy breathing. Beside good training and physical maintenance of the body, the athlete should take care of their health so that they can achieve the life expectancy of persons in their line of work.

The diet on which an athlete is put, should be able to support the daily physical activities of the athlete. An athlete who wants to maximize their performance should observe the right quantity and quality of the diet before, during and after the combat failure to which the lack of the right diet will have detrimental effects on the athlete. Food is very important to any human being. It serves to grow the body, provide energy, repair the worn-out cells and provide immunity to the body against infections. Food ensures that a person has the right strength to do something without necessarily affecting the body. Food contains nutrients that are classified in different groups according to their functions in the body; proteins, lipids and carbohydrates. The athlete

can achieve good diet by balancing their diet to make sure they have all the nutrients the body requires. A diet for an athlete should be able to meet the following objectives:

- Ensuring provision of the right quantity and quality, the nutrients necessary for meeting the overall caloric needs
- Contributing towards maintaining a healthy body
- Assisting in the recovery process

Creating, preparing and presenting it in a manner that all athletes can accept it.

Nutritionists believe that balancing of the diet is very important and calories are ranked. However, foods may be in the same category such as proteins but have different qualities and must therefore be chosen wisely. Some proteins have a lot of cholesterol while others have little, it is therefore prudent to know the right type of protein for a Taekwondo athlete. The best diet for a Taekwondo athlete should introduce into the body, 60-65 kcal/kg body weight and carbohydrates should be the highest in the composition, lipids should be less while maintaining the right amount of protein and fiber and water.

Quantity Aspect and Strength

Nutrition is a very important factor in athlete's life as it is a weight class sport. The athletes with maximum weight in their class can have an edge over the others in the same class. Moving into the next weight class would still be an advantage. To maintain the body weight at a specific level in a class requires a know-how of the energy requirements of energy and nutrition. There has to be a balance between the energy used and food energy created every day. To cause a

disruption in balance of energy in the body that creates a deficit in calories can be done in two ways;

- Dec
crease of the intake
- Incr
ease of expenditures

The idea is to decrease the caloric intake while exercise and training is meant to increase the energy expenditure.

The total amount of energy introduced in the body in one single day would be the levels of calories taken into the body and can be calculated by adding up all the constituents of foods taken up that day. There are certain foods that have high energy and people aiming at losing weight would require them not to eat such foods. Example is lipids; they have 9.3kcal/g and carbohydrates have 4.1 kcal/g which is half that of lipids. This means if a Taekwondo athlete must maintain their weight and fitness, they are not to take foods such as cheese, butter and mayonnaise. According to nutritionists, the addition of oil in foods when preparing them adds up calories in meals that didn't have any previously.

The daily usage of energy can be calculated by summing up all expenditures to the basal metabolism; energy used up in maintaining body temperature, energy used in digestion process and energy expenditure to do all the physical work. For an adult, the average amount of energy expenditure is an average of 2000-2800 kcal/day. When engaged in excessive physical activity, or ill or involvement in so much thinking and intellectual work by the brain would cause additional energy usage per day. If an athlete had a contest on a certain day, you would expect usage to increase slightly above normal.

To achieve optimum performance and have the required strength in Taekwondo, it is prudent to have and maintain the optimal weight during the training process. Drastic loss of calories and body mass has impact on the muscle and strength of the body on an athlete. In diets that restrict an athlete from consuming high calorie foods, the body conserves energy. In such diets, the athlete does not only risk losing the body mass but also muscle strength in trying not to accumulate fats in the body.

If an athlete has gained a lot of weight or fat in the body, they should slim, they should reduce their calorie intake by half. This deprivation of calorie can lead to loss of one pound every week. However, the athlete should be very cautious when trying to lose weight few weeks before a competition, as it could lead to dehydration and other negative effects on the body.

Qualitative Aspect, Conditioning and Health

The primary source of energy is carbohydrates. The body requires carbohydrates intake more than any other food in the body.

The role of Carbohydrates in the body

The carbohydrates are organic substances that are made of carbonyl and hydroxyl groups of elements. They basically contain carbon group and hydrogen as their primary elements.

Glucides are present in foods both in the plants and animals. Glucide are the complex form in

which the carbohydrates exist but once in the body, they are converted into glucose and other forms.

The right intake for carbohydrates should be 55-60 % of the total calorie taken into the body which translates to 10g/kg of body weight/day.

Food item	Calories	Grams carbohydrate
Breakfast		
8 ounces* orange juice	120	28
1 cup oatmeal	132	23
1 medium banana	101	26
8 ounces* low-fat milk	102	12
1 slice whole wheat toast	60	12
1 tablespoon jelly	57	15
Lunch		
2-ounces* slice ham	104	0
1 ounce* Swiss cheese	105	1
2 slices whole wheat bread	120	25
1 leaf lettuce	1	0
1 slice tomato	3	1
8 ounces* apple juice	116	30
8 ounces* skim milk	85	12
2 cookies	96	14
Dinner		
3 cups spaghetti	466	97
1 cup tomato sauce	89	19
with mushrooms	5	1
2 tablespoons Parmesan cheese	45	0
4 slices French bread	406	78
1 slice angel food cake	161	36
1/4 cup sliced strawberries	13	3
1/2 cup ice cream	133	16
Snack		
16 ounces* grape juice	330	83
6 fig cookies	386	81
Total	3236	613
		(75% of total calories)

Figure 1: A sample menu of high carbohydrate diet

Most organs in the body such as, the brain, liver, lungs and even the muscles depend on glucose as the main source of energy. Also, the nervous system which is a major control system depend on glucose for energy to do its work; reception. Without glucose, everything would stall.

It is very important to have in mind that, the rate of glucose absorption in the body organ is lower than that of fats.

Strength Training and Conditioning

One of the foundations of strength is the ideology of progressive improvement. Progression refers to the choice of exercise, resistance to the load, the arrangement in exercise practices, and the readiness of the athlete to practice for Taekwondo.

Performance is a function of very many factors; This can be explained using the performance pyramid. A Taekwondo athlete's performance is arranged in layers as shown by the figure 2 below:



Figure 2: Performance pyramid

It is important that we define various terms and what they are before going deep into Training, Strength and Conditioning.

Training- Training refers to the activity of preparing an athlete in the physical aspect, technically and psychologically for the optimal level of performance. Training is an extensive process and it involves more than just physical exercise and stretch of muscles. Training is related to the genetic characteristics of the Taekwondo athlete.

Volume- Volume refers to the quantity of work performed. Various sets and repetitions of a certain exercise to make up quantity. Example is strength training where volume will be calculated as sets multiplied by repeat of exercises related to Taekwondo.

Intensity- This is the level of difficulty and complexity of work done. It is basically the weight of a Taekwondo exercise. Taking an example of runners, the intensity of an exercise is the speed and time of a runner. For Taekwondo, it is the mastery of all the techniques and styles accomplished within a certain period that matches to the timing of a context.

Volume Load- This refers to the combination of two factors very key to training. It is calculated by the weight of Taekwondo Athlete multiplied by sets and repeat of the sets of practice.

The Principles of Training

The Principle of Individuality

Every Individual has different gifts in terms of physical strength and the genetic composition. The main factors that cause differences in the Taekwondo athletes include; Biological age, training age, gender, body size, and past events which might have caused injuries in previous Taekwondo fights.

The Principle of Specificity

The Muscle group trained adapts differently to the training. The body of a Taekwondo athlete is stimulated by very specific things. When overloaded, the body adapts in a specific way to deal with new load. In order to master the Taekwondo techniques, the body must be involved in specific body mechanics that would enable the athlete to perform optimally.

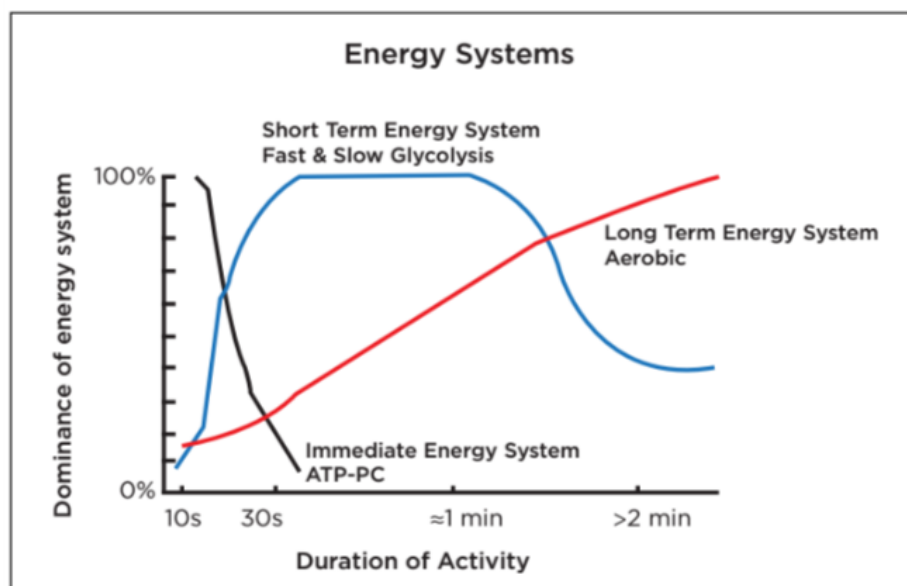
Principle of Overload

For Taekwondo athlete to achieve a certain target, objective and goals in training, the body must be subjected to high levels of stress that are induced by a certain stimulus. When an athlete is stressed, they tend to perform faster. Overload ensures that the body is able to improve by challenging the status quo.

The Principle of Progression

A Taekwondo athlete must be consistent and persistent in doing the exercises in order to achieve maximum weight in their weight groups, acquire flexibility and health. There is specific timing for working with a load, it is not supposed to be too fast or too slow. Resting is also part of training. According to experience Taekwondo Athletes, the best time to train is after a contest is right after a contest because currently the muscles are relaxed. The athlete must be able to burn the calories down through expenditure of energy. The body should not have more fats than muscles, it is in the best interest of the Taekwondo contestee, to be of maximum weight in his/her weight group, say an athlete is in the weight group 70-80 kg. The

80
the
73



athlete with
kg has an
edge over
athlete with
kg.

Figure 3: Dominant Energy system Based on Activities Duration

Conditioning

Why Conditioning is Important in Taekwondo Athletes

Physical Benefits of Conditioning

- Reduces the risk of injury and the chance of injuries. Fe
- Improves muscular strength and endurance. Gai
- Increases the flexibility of Taekwondo athletes. Hig
- Improves cardio-respiratory fitness. Hig
- Decreases muscle mass and body mass while reducing body fat. Incr
- Enhances overall fitness. Enh

Emotional Benefits

- High self-esteem, dignity. Hig
- Improved Ability to deal with stress. Imp
- Reduced anxiety, less tension and fatigue. Red
- Psychological well-being improves. The

Warm Up and Stretching

A warm-up is an exercise that a Taekwondo athlete does before the real contest. It prepares the athlete for a training session or a competition. This exercise is very important exercise as it reduces the chances of injuries and improves their performance. The idea behind warming up is to stimulate the Taekwondo athlete for what they are about to do, it prepares them mentally and physically. A warm exercise should be characterized by various activities, like jumping up and down, running or mock competition that increases the temperature of the muscles, increases the blood circulation and rehearsal of the Taekwondo skill. The relationship between warming up and preventing injuries is not direct or clear.

The Components of Warm-Up

A warm does not take so long, it should take 5-10 minutes because it is quite involving participating in the Taekwondo competition. It can be a simple exercise such as jogging and skipping. The aim here is to increase heart rate, the flow of blood, muscle temperature, rate of respiration and decrease the viscosity of the joints which is very important in Taekwondo. The warm-up should mock the activities of the real Taekwondo competition. Taekwondo requires a lot of energy; therefore, warm-up should have equal amount of vigor and energy.

Stretching

Stretching is classified into four major categories; static stretching, ballistic, dynamic and proprioceptive neuromuscular facilitation (PNF) Static stretching, is the most common among Taekwondo exercises and training. The aim of stretching is to enhance performance. Stretching in gymnastics develops strength, power, speed response time and endurance. Dynamic stretching is a functional based stretching, it improves speed of the athlete. This is the most preferred way of stretching during a warm-up exercise.

The intensity of stretching required in warming-up is dependent on the type of sport. Sports such as Taekwondo that require flexibility, need a greater level of stretching. Strengthening, training and conditioning athletes should know the specific range of motion and stretch-shortening cycle requirements of the sport they are involved in. They should use this to come up with the best choice of warm-up. In the modern sports world, there is information available from different sources which can help guide the Taekwondo athlete on the conditioning they need, the warm-up, stretching intensity, nutrition and the health of the athlete. Each athlete should have their own coach, nutritionists and Psychologists. The body needs to practice from time to time, the body adapts to the level of stress it is exposed to so that it can be able to perform optimally in a competition.

Conclusion

Taekwondo requires passion, practice, conditioning, training and be on the right diet. It is difficult to maintain the body at the maximum weight without following or observing all these.

Beside this, the type of diet that a Taekwondo athlete is on, will determine the amount of nutrients available for them to maintain their body fitness and Healthwise.

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