UNIDAD EDUCATIVA PARTICULAR JAVIER

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MONOGRAPH

"Analysis of first level football players in the area of food, exercise and rest."

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Gratitude

Firstly, I would like to thank God and the "Sorrows Mother" for the support I have found on them to keep going with everything I have done, both in school and life, and for giving me so many blessings during my life. I want to thank my family, my brothers and my parents, who have always helped me and have being that guide every teenager needs; for putting me in this prestigious school, and for looking after me. Finally, but not less important, I need to thank my friends and my teachers, because they have helped me with every doubt I have had during this process.

Summary

As an athlete, physical health is the key to have an active lifestyle. The body to move mainly uses two energy reserves: glycogen (sugars) and fats. There is a third, which are proteins, but they are used in a very low percentage. Each person, each athlete, necessities are different, they have many basic needs, but some require more fats, others require more protein. To practice any sport, even less one involving a lot of cardio, it is not advisable to do it on an empty stomach, because that may produce fatigue and muscular atrophy. Soccer players produce a considerable expenditure of energy in the changes of direction or when accelerating, decelerating, jumping, jogging, walking or standing. The capacity the human body has a limit and if you want to pass it aggressively, you can get injured. The ingestion of fluids during exercise has two objectives, to provide a source of energy such as carbohydrate, completing the spent reserves, and supplying water and electrolytes replacing the losses by sweating.

Soccer players face a high physical demand of exercises every day, which can lead them to muscle overload. This can be avoided by stretching, proper exercise that does not exceed capacity, and a good rest. Soccer as any other sport must always begin with a series or warm-up exercises to prevent injures. A very good advice, especially for those soccer players who stopped playing due to an injury, begin step by step before reaching to their previous training style. Practicing at the gym is an essential activity for any soccer player, reason why every top level soccer team have their own gym for their players. Between the many possible injures there are muscle strains, caused by many things, but mainly because of exercising too much after a training session or after a long match, this is why rest is always essential. It is

advisable for players to have a strict diet to have strong muscles, tendons, ligaments, etc. Injures can come due to a bad movement and, unfortunately, many times added to the lack of protein giving the player weak tendons and ligaments.

To be healthy, it is necessary to carry out a physical activity appropriate to the age and the specific conditions of each person, to eat in a balanced way and to be well hydrated. Water needs can vary in each individual according to various factors such as: age, sex, intensity and duration of possible physical activities, etc. The advisable thing for the soccer player, is to drink around half a liter of liquid one or two hours before the exercise, either a match or a high performance training.

Index

Introduction

The following monograph "Analysis of first level football players in the area of food, exercise and rest" will explain mostly the activities soccer players usually do off the court, and how this thing can affect them. To start it is essential to talk about athletes, because soccer players are athletes, just as people who practice any other sport. After introducing the topic to people who practice sports, soccer player topics can be talked about, such as their exercising, nutrition and the rest they need to optimize recover after hard training, or matches, etc.

This is an important topic to investigate because approximately more than 55% of the population practice any sport or do any physical activity, which is a high percent. So, there is a huge amount of people who should know the needs for an athlete. The athlete needs to know what to eat to have a good development on the sport practiced and not to suffer any injure for lack of protein or carbohydrates. Another important thing is the necessary hours of sleep soccer players, as athletes, need to have each day for muscles to recover and gain strength in a much better way. In addition, hydration is very important, especially for soccer players, because soccer is a cardiovascular sport and they dehydrate a lot each game.

Many studies have been made about this topic by medical schools as sports are not only fun for most athletes, but also healthy and a recommendation for each human being. Most investigations are based on the nutrition of soccer players and other sports people.

There have been many cases of soccer players who have been out of the fields for injures surprisingly caused by a bad nutrition, or dehydration because the players doesn't know their needs and doctors are not aware of the players habits.

Chapter 1, named recommended diet for high level athletes, there's the base nutrition and care for athletes. In this one there's the feeding for cardiovascular sports. The last one includes recommended nutrition for 1st level soccer players. Another sub topic is care for first level European soccer players. And the necessary hydration for a cardiovascular athlete. Chapter 2, called actions and recommendations to avoid muscle overwork, describes limits when training, when exercising, and the necessary rest to recover muscles. Finally, chapter 3, titled "injuries in athletes", involves topics of injuries for bad nutrition, or bad hydration.

Chapter I

Recommended diet for high level athletes

1.1 Base nutrition and care for athletes

As an athlete, physical health is the key to have an active lifestyle. These people depend on their strength, resistance and ability, either if you go behind the ball or need one last breath to win the race. Just like a machine, the human body does not work properly without its proper fuel. It has to get enough calories, vitamins and other nutrients that provide energy. Just as mentioned by Clifford and Maloney (s.f.), "optimal nutrition is essential for peak performance. Nutritional misinformation can do as much harm to the ambitious athlete as good nutrition can help" (p. 1).

The body to move mainly uses two energy reserves: glycogen (sugars) and fats. There is a third, which are proteins, but they are used in a very low percentage. When our body does not have enough glycogen or fat, the percentage of use of its own proteins as an energy substrate increases. This process of obtaining energy is less efficient than that of fats and can also mean a loss of muscle mass in training beyond normal, undesirable effect for the athlete.

It is very important to know also that each person necessities are different, some people need more carbohydrates, and others need more protein or something else,

depending on the person´s needs because of the metabolism, the sport being practiced, the age, weight, etc. Referring to Aitken (1953):

> "The principles of nutrition of athletes are the same as those of nutrition of non-athletes. A nutritionally adequate diet in amounts sufficient for energy requirement and maintenance of desired bodyweight should be the rule. The timing of meals should be related to the times of exercise to allow of efficient digestion and efficient athletic performance." (párr. 1)

Most people need between 1500 and 2000 calories a day, but for athletes this number can raise up to 2500 or even 3000 calories.

Every athlete should look for a doctor, so the dr. can help him or her determine a healthy daily calorie count. And over time, learn how to balance consumption and spending to avoid extreme weight gain or loss.

1.1.1 Feeding for cardiovascular sports.

This type of physical exercise activates our body to the maximum, causing our fat to be transformed into energy and, consequently, it helps us lose weight. If you are going to exercise, you have to know that your body has to be prepared for the extra energy demand that you are going to request that day, so it is not advisable to do cardio on an empty stomach.

These sports and exercises require some especial things different from a regular sport. Following some recommendations from some authors:

> "As exercise intensity changes (like due to an increase in speed or running uphill, for example), the body switches back and forth between carbs and fat to provide energy. Since you can't completely control how and when the body needs what nutrient, it's best to have adequate amounts of both as a regular part of the diet. Best choices for carbs are whole grains, fruits, vegetables, legumes and dairy. The healthiest types of fats come from foods like olive oil, avocado, nuts, peanut butter, eggs and salmon". (White, 2011, párr. 3)

1.1.1.1 Recommended nutrition for 1st level soccer players.

After reading the comment of Eat Right to Play Right (s.f.), "following a good dietary plan, eating well-balanced meals and staying hydrated, soccer players will discipline themselves. Performance levels should increase, overall health should improve, and preparation will be made for future competitions at higher levels of play" (p. 1), it is easy to link food and soccer.

The duration of a football match according to FIFA (International Football Federation), is 2 halves of 45 minutes each. Soccer players, in addition to race power, must execute skills and make tactical decisions by reading the game. The diet for soccer players, improves the sports performance and the cognitive function of the player, of course this is apart from many other facts to be aware to.

Players produce a considerable expenditure of energy in the changes of direction or when accelerating, decelerating, jumping, jogging, walking or standing. Normally there is a high level of physical interaction between players and opponents.

1.1.2 Care of European soccer teams with 1st level players.

European soccer teams have many specialists taking care of their soccer players the whole season, psychologists to check how they feel, a massage person to relax muscles when overloaded, and nutritionists so they can tell the player what to eat, what to avoid, etc, many doctors, more common traumatologist, for the injuries when playing, etc.

To have an opinion it is not possible to forget to mention Bongiovanni (2015), culturally we do not prepare the mind of the player, we (physical

trainer) are psychologists, because it is a lie that when playing a game, they are tired, we must put in their heads that they can play two or three games per week. The capacity the human body has a limit and if you want to pass it, you can get injured.

1.2 Necessary hydration for a cardiovascular type athlete

Drink enough liquid to be always hydrated. This will greatly influence athletic performance. The ingestion of fluids during exercise has two objectives, to provide a source of energy such as carbohydrate, completing the spent reserves, and supplying water and electrolytes replacing the losses by sweating.

The amount of liquid that should be ingested. The volume consumed must be greater than the volume of fluid lost, but that will depend on the individual characteristics of each athlete and the environment in which the test is performed.

Chapter II

Actions and recommendations to avoid muscle overwork

2.1 Physical care to avoid muscle overload on soccer players

Soccer players face a high physical demand of exercises every day, which can lead them to muscle overload, this means an involuntary and continuous contraction of muscle fibers as a result of excessive practice of sports, such as football in this case, or the poor performance of an exercise, this contraction can even tear them.

This muscle overload, just as many things in life, can be avoided by stretching, proper exercise that does not exceed capacity, and a good rest. Soccer as any other sport must always begin with a series or warm-up exercises, in this case, there are several stretching exercises such as: calf stretch, as it is a common area for cramps after a hard training session, or a long soccer match; quad stretching is commonly done after lifting weights at the gym or doing squads; and last one to mention is the hamstring stretch, very important as many soccer players do this one immediately after matches in the field. Regarding exercises, there is a long list of them, but when training soccer these exercises are usually practiced so it's a matter of warming up, then doing the exercises, and doing them properly to get stability, more strength and muscle resistance.

Exercising regularly is very important to prevent any muscle overload for any athlete, including of course soccer players, as written by Pietrangelo (2018):

> "Regular exercise can keep your muscles healthy and strong, but proper techniques are also crucial in preventing muscle strains. Always stretch and warm up before engaging in physical activity. Similarly, take the time to stretch after each workout or session of physical activity to prevent muscle

> stiffness. If you're new to exercising, start slowly. Build up your activity a little at a time. It's vital that you understand your body's limitations. If something doesn't feel right during an activity, stop immediately." (párr. 24)

A very good advice, especially for that soccer players who stopped playing for an injure but also for the ones who stopped playing for no reason, so that they do not get an injure, in this case a muscular one, is to return gradually to soccer practice, not to start playing as if had been training daily. All of this agreeing and quoting Burger & Fine (2017), "after a period of inactivity, progress gradually back to full-contact soccer through activities such as aerobic conditioning, strength training, and agility training" (p. 2).

2.1.1 Limits and recommendations of post-training exercise for the soccer player.

Gym is an essential activity for any soccer player, reason why every top level soccer team have their own gym for their players. As suggested by Yeste (2017), there is a competitive advantage for the vast majority of sports disciplines. The reason is very clear, the basic physical capabilities of performance such as endurance, strength, speed, mobility and coordination are transversal to most sports and working them conscientiously in the gym will improve them if we do it effectively.

For footballers it is very important that they work both the lower train, to achieve a powerful muscular mass that faces everything, as the upper train; in this way there will be harmony between this two. If the objective is that the union of these two forces does not cause problems and that there is a correct transfer of energy between them, it will be necessary to include in post-training, meaning working out in the gym, an important core work (central part of the body).

To have a good command of both the body and the ball, you must also take into account the coordination between the upper and lower train. It is an essential condition of any day-to-day movement and more in the context of this sport. To evolve intelligently it will be essential to take into account that the intensity and volume that is going to be applied in the gym have a coherent relationship with the training that is already being done, so as not to over train and to be able to absorb both effectively. The gym can help us improve all this.

As exposes Pietriangelo (2018):

> "There's a misconception that only rigorous exercises and workouts of high intensity cause muscle strains. According to Johns Hopkins Medicine, muscle strains can even occur from

walking. An acute strain can happen when you slip or lose your footing, jump, run, throw something, lift something heavy, lift something while in you're in an awkward position, etc."

Muscle strains are caused by many things, sometimes it is not easy to understand the reason, but other times is easier, because of exercising too much after a training session or after along match. This is a reason why there must always exist limits; of course limits depend of each person cause some people have more resistance and muscle mass to endure high performance exercises apart from training, some others just need to rest. One of the best recommendations to give is to only push your muscle limits when there are no matches soon so that the muscle can recover better and stronger than before.

2.2 Rest and necessary hours of sleep for elite soccer players

Rest is always essential, since on many occasions the ailments are there without manifesting themselves, and if space is not given to recovery they will persist and worsen.

Rest can either mean sleeping or active rest, and as an example of the last one there is stretching, something that is put into practice before and after each workout, but that contrary to what many people believe, is also useful in regard to rest.

The relationship between physiotherapy and rest is widely supported by science, and there is a growing need for effective intervention by the sports specialist physiotherapist. The physiotherapist will apply the necessary treatments so that an athlete can recover in the shortest time possible from the injuries diagnosed by the sports doctor. Also, massage is a strategy of recovery widely used among athletes after a high physical demand. In addition, several reviews of the effects of massage have concluded that it is beneficial and can improve the psychological aspects of recovery.

Hydrotherapy is widely incorporated in recovery regimens after exercise. The human body responds to immersion in water with changes in the heart, vascular resistance and blood flow, as well as alterations in skin, central and muscular temperatures. Changes in blood flow and temperature can have a positive effect on inflammation, muscle pain and fatigue perception. It is no wonder then to see players like Cristiano Ronaldo recovering in the pool after a game or a workout.

Referring to sleeping hours necessary to recover, athletes are advised to sleep 8 to 10 hours. The acute or chronic loss of sleep has been associated with sports injuries, defining the term 'fatigue-related injuries' which is related to sleeping six hours or less before the injury. The loss of sleep increases the risk of overstretching injuries, and may be associated with a reduction in concentration, attention and reaction time observed after acute loss of sleep.

Chapter III

Injuries in athletes

3.1 Injuries for a bad nutrition in athletes and recommendations

In general, in all types of people, eating a balanced diet allows you to achieve an optimal state of health and the energy necessary to spend the day. An unhealthy diet is in many cases the main cause of tendon injuries, such as the so-called "tendonitis" of long

evolution or tendinosis, and other muscle injuries, as well as a risk factor to suffer this type of injuries in athletes.

People who practice sports and abuse what is called acidifying foods, have acidosis of the tissues, which is that toxic elements accumulate making these tissues more rigid, have worse vascularization and therefore a greater risk of fibrillary tears and degeneration of the tendons that are most requested in the sporting gesture, making the athlete prone to injuries of this type. In these cases it will be essential to follow a healthy diet consisting of whole grains, whole wheat bread, whole meal pasta, potatoes, legumes, lots of fruit and vegetables, unrefined vegetable oils and blue fish, not only to maintain the body in a good condition, but also to help these tendons gain strength for the sport practice.

Given the type of injuries that allow you to stay a bit active, which would be if the injury is not something serious, it is unlikely that the athlete fattens or increases his body fat percentage and, further, following a good rehabilitation plan, there is also not much risk of losing muscle mass.

Therefore, nutritional interventions, in these cases, should be basically aimed at lowering inflammation and favoring the formation of new tissue and healing, which happens to increase the contribution of proteins of high biological quality.

3.1.1 Injuries for lack of protein in soccer players and advices to recover and prevent them.

There are uncountable injuries soccer players may suffer among their careers, and of course a big part of them are unavoidable, but there are some caused by bad nutrition habits that can be avoided.

For example, a rupture of crossed ligaments is very common in soccer players, due to a bad movement and, unfortunately, many times added to the lack of protein giving the player weak tendons and ligaments. This case forces the person to stay in bed, to be forced to spend a more or less long period of immobilization and once this phase is over, the player´s activity will remain limited for a season. Therefore, in these cases, if there is not a nutritional intervention, most likely the athlete will gain body fat, while losing muscle mass and functionality due to the absence of stimuli caused by training. It is important to notice it does not only depend on the exercise the player has to do to recover, but also to the proteins needed to gain strength once again.

It is not of less interest to emphasize that only with an immobilization of more than 5 days there is already a loss of strength, in addition to muscle atrophy. This happens because in the absence of muscle stimulation, the

degradation of muscle proteins rapidly increases, while their synthesis decreases, both at baseline and after food intake. Therefore, muscle mass, strength and also functionality are lost. Something similar happens with sarcopenia, which is the degenerative loss of muscle mass and strength as you get older or when you lead a sedentary life.

The best option to take here is to increase the intake of proteins of high biological quality, which are those that have more of an amino acid called 'leucine', which helps to slow down the destruction of proteins that is being caused by inactivity, while also favoring the formation of new muscle fibers. That is, it has an anabolic effect.

3.2 Hydration in athletes

Hydration is one essential thing to take care for athletes, as says Gonzales (2001):

"All exercise involves a loss of fluid that the athlete must know how to treat. Therefore, it is necessary to maintain a correct hydration to replenish fluids and improve recovery. Poor hydration can cause jerks, cramps and injuries to internal organs, such as the kidney, liver or brain."

To be healthy, it is necessary to carry out a physical activity appropriate to the age and the specific conditions of each person, to eat in a balanced way and to be well hydrated.

The practice of exercise leads to an increase in sweating and therefore an increase in the need for water in the body. Arrived here, it seems evident that as dietary recommendations are made based on the variety, quality and balance of the food ingested by the athlete, it will also be necessary to monitor the quantity and quality of what they drink.

For an adult, the recommended intake of water in normal conditions is around 2 liters per day, but this amount can be much higher in case of adverse weather (very hot) and with the practice of intense physical activity.

Physical activity is one of the most important factors in the loss of water, for example after running an hour the body can lose around 1.8 liters, 0.5 l after an hour of swimming, 1.5 l after a football game or basketball or 1.8 l after an hour playing tennis.

It should not be forgotten that water needs can vary in each individual according to various factors such as: age, sex, intensity and duration of possible physical activities, high

temperatures and humidity, type of clothing and the individual sweat rate of each person.

All these factors determine the amount of water an athlete should drink daily.

3.2.1 Causes of bad hydration in athletes.

When the fluid lost during the development of a physical activity or sport is not replenished, it reaches a state of dehydration that can lead to side effects that affect, not only the decrease in physical performance but also have serious consequences for health, such as heatstroke.

Most fans of sports regularly neglect their hydration due to ignorance, which is the main cause of dehydration, and it is actually their fault not to investigate about hydration before practicing any sport. Because of this some of them think they only need water, and worse of all, just a little of it. Some do not drink enough water, or not at the right time, which would be before, during and after the physical activity. After intense exercise, few replace the loss of electrolytes with isotonic drinks. Poor hydration can cause jerks, cramps and injuries to internal organs, such as the kidney, liver or brain.

3.2.2 Injuries as a result of bad hydration in athletes.

As explained before, the first thing caused by bad hydration, apart from being thirsty and tired, are jerks and cramps. After what said by George (2017), "Dehydration is only one potential cause of muscle cramps, but it's one worth considering if you get cramps while exercising, particularly in hot weather" (párr. 8). These cramps are the main physical consequence of dehydration, and there are many cases of athletes who get cramps, then they seem to recover, but when they practice any sport again, they fall in the injury once again. There's a soccer player named Ariel Nahuelpan, who had cramps and didn't know why. Neither the doctors knew until they ran some tests, and the player was so dehydrated his muscles couldn't handle a complete match or a hard training session. He had to be medically rehydrated in order to recover and not get injured by the same thing again.

Therefore, maintaining adequate hydration in the performance of physical activity is essential for the responsible and safe practice of any sport and thus achieve greater physical performance.

3.2.3 Recommendations for soccer players in order to hydrate better and recover from injuries.

The advisable thing for the soccer player, is to drink around half a liter of liquid one or two hours before the exercise, either a match or a high performance training, which allows a lower increase in core body temperature and decreases the perception of effort. Just as written by Montairo (2003):

> "Volunteer hyper-hydration during the week before competition seems to increase body reserve of fluids and improve temperature regulation. Such hyper-hydration should be done through the intake of 300-600 ml of fluids at pre-competition meals, and an extra 150 to 300 ml of fluids at every 15-20 minutes, until 45 minutes prior to the beginning of the competition event, for the athlete to have time to eliminate the excess through the urine before competition." (párr. 4)

In the half time, and if the opportunity is given even in the middle of each half-time, not much since it can cause stomach discomfort. At the end of the game, in the first hour mainly, take between 450-675 milliliters for every 0.5 kilograms of weight lost.

Conclusions

At the end of this monographic work it is concluded that:

- Every person has different needs of nutrition, based on their habits, if they do any kind of exercise, if they like walking a lot, etc. Athletes need special diets depending on the sport they practice because some sports require the athlete to have a diet based on proteins, other sports require more carbohydrates, and other may require fiber more than fats. All these are the reasons why it is advisable for athletes to be very careful on what they eat, and to have a nutrition control from a specialist for a better performance when training.

- The human body has its own limits, whether in the strength of the muscles or in the physical resistance. Athletes expand these limits throughout their lives thanks to daily work, but this must be done step by step, and not from one day to the next, because

even if they are athletes, they are not robots, and the need to adapt to a greater demand, so it is unfavorable for any athlete to force the muscles and their own physical performance abruptly, as this will most likely produce muscular loads, slight injuries, or serious injuries.

- People need to rest in order to be fit for each day. Athletes, footballers, basketball players, tennis players, etc., need to have greater control of their rest in order to have an optimal performance on the courts. The athletes of today, not only control their sleep hours but also all the factors that influence the good rest of the body to avoid fatigue, overload, and keep their minds healthy.

- Hydration is something very important in the daily life of any person. In athletes, and soccer players perhaps even more, hydration can play a decisive role in their careers. If it is good, the player will have a great performance, recover quickly from fatigue and be in good condition to continue with constant training, but if it is bad it can cause more fatigue on the court and very continuous muscular injuries.

Recommendations

At the end of this work it is recommended that:

- Due to the lack of importance of some athletes towards all aspects that influence their performance, in this case nutrition, to promote the importance of nutritional care by a specialist to improve performance and avoid injuries.

- Hydration is promoted in the sport environment not only during and after training, but also before to avoid a rapid dehydration of the athlete.

- The control of the sleeping of the athlete takes on greater importance because nowadays not everyone takes it into account, or not everyone is concerned about all the aspects that affect the rest, and that follow-up to the rest that the athletes have in the present.

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