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CONSIDERATIONS ON SPECIFIC RESISTANCE IN A SOCCER GAME

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Abstract: *In these pages we have tried to emphasize the quality of driving and resistance and to underline the most important issues related to the specific resistance of a soccer game. Soccer is one of the most complex sports games, seeking quality driving, mental and technical merit, but especially a perfect mixture between all these. Modern competitive soccer claims overall resistance (as basic physical fitness). In the preparation of soccer players specific training methods should be based on modelling the requirements of preparing a competitive game.*

Key words: *soccer, resistance, specific resistance.*

Soccer - generally considered the most popular sport in the world - may owe its appeal to simplicity as well as the skill and cunning required in the fast-paced intrigue of the game. Played at a professional level all over the world as well as by serious amateur teams, or for pure entertainment, soccer is a regular pastime for over 240 million people in over 200 countries worldwide. The Soccer World Cup, held every four years, pits the top teams in the world against each other and draws enormous audiences for both the stadium games and television.

In literature resistance is defined by multiple formulations, all expressing the same kind of issue:

- "The ability to cope with fatigue caused by physical effort, without a decline over the actions of those potential movements of work necessary to achieve the objectives" [14, p.206];
- "The ability to perform mechanical work of certain intensity for a long time without lowering the efficiency of the work done in the state of repressing fatigue" [1, p. 332];
- "The ability to work for a relatively long duration and with a relatively high intensity, maintaining constant indices of optimal effectiveness" [4, p.47];
- "The ability to make efforts for a long time without reducing efficiency" [13, p.169];
- "Resistance refers to the time required for an individual to run with certain intensity" [3, p.92];
- The ability to perform high intensity work longer;
- Maintaining working capacity during long-term efforts by defeating the phenomenon of fatigue, and a high tempo of restoring the body after tiring it;
- The ability to do any activity for a long time without reducing its effectiveness;
- The psychophysical ability of the performer's body to cope with fatigue by specific activity.

From these definitions come off a few key elements which characterize the driving quality, namely:

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- Time (duration) effort, which can be determined in advance, but on the basis of work done and efficiency; when determined in a time unit, it must be carried out in a certain way;
- Effectiveness as a constant business driver throughout;
- Rapid recovery after the effort made.

Work for the development of resistance is still a battle to delay as much as possible the appearance of the fatigue phenomenon in an effort of certain intensity, being aware that fatigue is the main factor limiting the emergence of resistance over time.

The phenomenon of physical and mental fatigue of the organism appears naturally following efforts of various types, intensity and volume.

Fatigue is the transient activity produced by prolonged or excessive effort, characterized by a decreased functional potential of the body and a subjective sensation feature. Fatigue, as a replication of complex and hyper-complex effort, breaks homeostasis by altering biochemical processes, favoring the transition to a new state of adaptation, higher than earlier. Fatigue is thus a factor stimulating the functional and emotional resources.

Fatigue is a phenomenon accompanying the necessary training, and at the same time a prerequisite for enhancing sports performance. In fact, it is only the repetition of efforts that produces phenomena causing fatigue processes, overcompensation, and finally an adaptation of the organism. Training, on the one hand, must produce those states in adapting fatigue, and on the other hand, must avoid being extreme.

A. Gage demonstrated by computer simulation that fatigue is the body's acute response to physical effort. At low and moderate demand capacity the answer is increased due to the activation of the physiological functions involved in the effort, to demand high capacity, showing fatigue as a syndrome. In extremis, fatigue maximum is equivalent to exhaustion.

In the production of fatigue after muscular exertion, the following processes take place:

- During muscle contractions, a transmission pulse occurs from the receptive muscle, which alters the nervous system and device drivers;
- Muscle contractions cause alterations in the chemical composition of the muscle tissue, leading to a request of the interested receptor;
- Metabolism products spread into the blood, changes of the body's internal environment influence, in turn, the central nervous system;
- The state of excitation of nerve cells in the muscle activity cannot remain untainted;
- In the muscle function are amended also endocrine glands.

Intense muscle activity is related to the potential of functions to return to previous levels, and the level above.

The first installation of fatigue is signalled by specific phenomena such as sweating and involuntary tension of the mimic. But these phenomena do not preclude the possibility of continuing effort, through an increased willingness on the initial intensity. Therefore, this state is called physiological phase offset fatigue. By continuing the effort, the subject decompensates in second-stage fatigue - where, with every effort of will he cannot maintain the same intensity of effort, reducing it gradually to a total cessation of activity. These phenomena are manifested differently from one person to another, depending on individual resistance, which is determined in turn by the following factors:

- The capacity of the central nervous system to coordinate the activity of the locomotive and vegetative functions;
- Aerobic capacity, aerobic potential which enables the production of energy in the presence of oxygen and anaerobic capacity;
- The adaptation to effort of the cardiovascular and respiratory systems and of all body functions;
- The energy and oxidative metabolism of the muscle, notably the fact that in muscle cells there can be distinguished three sources of energy to ensure muscle contractions: alactacid anaerobic energy, lactacid anaerobic energy, and aerobic energy;
- Strength of will in sport – which is an important component in training speed, demanding the athletes in particular when they have to make an effort in conditions of fatigue, or when the level of fatigue increases as a result of prolonged activity; athletes command nervous centres to continue or even intensify the effort;
- Book speed of athletes.

Moreover, development of resistance is achieved only through efforts that lead to the appearance of fatigue and attempts to overcome fatigue and continue the effort after it.

Oancea V. says: "Resistance depends on many factors, including speed, muscle strength, technical skills in the implementation of effective actions, the ability to use one's potential economically, physiological and psychological conditions at the time of that effort."

Regarding the forms of manifestation of resistance, the author believes that a systematic classification is appropriate:

- Depending on the participation share of muscle groups: general strength, specific strength (specific) and local resistance;
- Depending on how they are combined with other driving qualities: resistance as speed, strength as force, resistance in the regime of detention, etc.;
- Depending on the nature of the effort: constant resistance and variable resistance in the effort;
- Depending on the duration of the effort: long-term strength (with effort over 8 minutes), average resistance time (effort 2-6 minutes) and short-lasting resistance. (effort between 45 seconds and 2 minutes);
- Depending on the energy sources and the effort: resistance of the aerobic load times are from 3-5 minutes to several hours, of anaerobic resistance in the load duration of 7-60 seconds, and mixed resistance-types with variable durations and intensity.

Aerobic resistance develops during the transition period and the initial phase of training using uniform and stable conditions with a moderate intensity from the average. As a consequence, the cardio-respiratory system of athletes improves progressively. Along with the adaptation to training, the work load should increase, in particular the volume of training. There must be a transition from aerobic resistance specified by the pace of activity and specific rhythmic exercises.

As a general line, the following are significant in training to develop aerobic resistance:

- Intensity of training below 70% of the maximum speed; the intensity can be measured by performance time on a certain distance, the speed in meters per second or heart rate (training stimuli that do not increase heart rate more than 130 beatings per minute do not develop significant aerobic capacity);
- The duration of a stimulus in isolation (a repetition) should differ from 60-90 seconds to 3-10 minutes;
- Calculate the rest breaks so that the next stimulus can produce favourable changes in the period from the previous work (45-90 sec.) Aerobic resistance for

the rest should not exceed 3-4 minutes (usually work may start when the heart rate decreases to 120 BPM);

- Normally work during a rest break is reduced in intensity to stimulate biological restoration.

Anaerobic resistance is an important physiological advantage. Most of the development of anaerobic resistance is cyclical and of high intensity.

The preparation for anaerobic resistance presumes the following:

- The intensity of the situation may be limited to the maximum sub-maximal, even if the training intensity is varied; for the development of resistance the anaerobic intensities of 90-95% should predominate;
- The duration of work must fall between 5 and 120 seconds, depending on the intensity used by athletes;
- The break after a rest-activity must be sufficiently long to compensate for the oxygen debt, which can be 2-10 minutes; it is recommended to divide the total number of repetitions in some repetitious series of 4-6 each, with the most between long-range in order to oxidize lactic acid;
- Up to halftime the activity must be active, easy and relaxing;
- The number of repetitions must fall below the lower average.

In sports games in particular, the development of resistance is a complex task because sports games are combinations of aerobic and anaerobic components. To support the three energy systems used in sports games, exercises are proposed for specific intensified energy systems such as:

- High intensity exercise with a duration of 5-15 sec. alactacid system calls;
- High intensity exercises, with a duration of 20-90 sec. lactacid calling system;
- Years of continuous average intensity / high duration equal to or longer than 2-5 min. develop requirements in aerobic sports teams.

Resistance specific games can be developed using the method of determination, where training will be calculated so as to correspond to specific physical or psychological characteristics, and tactical game, respectively.

The development of resistance has a series of specific variants:

- "The distance: distance less than the sample equal to the sample distance with tactical tasks, longer than the distance of the sample;
- The speed intensity of playing: faster than the speed of the game, as fast as the speed of the game, slightly less, or less than the intensity of the game".

Football is one of the most complex sports games, seeking quality driven, mental and technical merit, but especially a perfect mix of their own.

Modern competitive football claims overall resistance (as basic physical fitness). Even if we refer to the simple parameters of the game, 90 minutes of effort over 10-12 km, with many jumps, processes, etc., resistance comes in clear evidence. Although the general feature of the game is determined by movements in executions and speed, one should not forget that a pronounced degree of fatigue prevents the recovery potential. After 60-70 minutes of a game, even the faster or more technical players cannot cope with competition requirements unless they have good physical training.

The characteristic energy of the effort is classified by most authors into anaerobic types. Following complex measurements made during the game on different positions in different games, these data have been reconsidered, increasing the share of aerobic processes. They even reached proportions of 40%, which is explainable by the multitude of game

situations where there are movements at moderate speeds.

Resistance considerations:

- Resilience is a basic quality developed at a high level, enabling players to perform all technical and tactical procedures in the game without visible effort and without a decline in efficiency and precision;
- Performance in sports games is achieved by superior mixed aerobic and maintained at a high level through appropriate training;
- Football strength is not only general, but appears as a combination of speed and force structure and, because of the game demands, as particular, specific;
- The football game presumes resistance in the following cases and situations: resistance during a whole game, resistance required by the physical, technical, tactical action of a game, resistance required by several actions, resistance related to prolonged or repeated efforts of speed, resistance to repeated efforts to force the player to continue execution, technical resistance to the psycho-emotional demands of the game;
- One must work at least 20 minutes for the effort to be incentive (to have endurance characteristics).

In the current literature there are references to specific training methods for sports games, based on modelling the requirements of preparing the competitive game in question.

I believe that it would be referred to considerations relating to new approaches in the current practice of sports games.

Method rehearsals may be used in games and sports such as football by making repeated requests for longer or shorter distance than in tactical manoeuvres during a major game of football, which aims to develop resistance to a specific game.

Rehearsal exercises or longer exercises lay stronger emphasis on the aerobic component of the game.

Shorter repetition on the other hand is specific of the game because the speed is closer to the game speed. Multiple repetitions of these exercises have the effect of lateral development and power of will.

The total work can be 20-30 minutes with breaks of 3-5 minutes, depending on the distance between the intensity and repetition.

The training model is considered as a variant of repetitive training, since a player repeats several times in training actions characteristic of the game (and here comes the training model).

There are several training models: training models for the training of specific energy or momentum of the game and complex training models.

Training models for the training of a specific energy consumption rate or a specific application offer an advantage for players according to the specific rhythms of a game.

Note that at the beginning types of technical and tactical exercises and lactic-alactic are used, in the middle especially the aerobic type is used, and in late years for both the lactic and aerobic systems. The first part of the training consists of several short rehearsals performed with great intensity (which requires both the lactic and the alactic); the means of training uses aerobic exercise, and the closing of new uses repetition of short duration, to shape the intensity increased at the end of the game. Players do the repetition at a high degree of fatigue, where the lactic and aerobic systems are much prompted.

There are other possible variations, such as the use of fast rhythms at the beginning of each part of the lesson, or imposing a fast pace and strong side of each lesson.

When lessons are organized, the training model must take into account several factors such as volume of work, speed, rest intervals, the number of repetitions, individual peculiarities and characteristics of the game of soccer. This method is shown in pre-competition and competition periods.

When taking into account the technical, tactical and physical game, a complex training model can be organized that may require capacity building and driving the necessary physiological football game.

In the game of football are recommended the following distances and intensities of the activities performed:

- Sprint 30 m to 100%;
- Running steps to 30-50 m high at 70%;
- Heat resistance of 50-400 m low intensity;
- Acceleration – deceleration to 10-20 m, 80-100%;
- Starts-stops on the 5-15 m, 70-100%;
- Variations of the direction changes at 50-100 m. 5-20%;
- 5-10 jump over simple obstacles 25-40 cm high.

In modern practice, the preparation of sports requires a huge volume of daily, monthly, yearly training, requiring full body resistance. Phenomena that occur in the body during exercise or subsequent resistance effects are profound, easy to dose, measurable techniques using both simple and complex investigation.

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