Abstract
The horizontal bar, as a gymnastic apparatus, was invented by the founder of the German gymnastic system Ludwig Jahn in 1811 and afterwards it was introduced and developed by him and his students. Jahn's primitive horizontal wooden bar was nothing more than a bar pinned-fixed between two trees. Later on, construct manufactured horizontal bars fixed on the ground, with two pilasters and with various arrangements and sizes. The exercises were mostly static, dynamic and close to the bar, since these wooden horizontal bars did not allow large swings. At the same time a special elaboration was established for the bar, in order to make it endurable and easy to use. In the middle of the 19th century the metal bars began to appear and influenced favourably the quality and the quantity of the exercises. At the same time this apparatus and the parallel bars were established as the dominant apparatuses of the German gymnastic system. The purpose of this study was to research and demonstrate the main features of the evolution of the horizontal bar (exercises, rules and apparatus) during the first half of the 19th century.

Keywords: JAHN / PILASTERS / WOODEN BAR / DYNAMIC-STATIC EXERCISES

INTRODUCTION

The horizontal bar is called the "king" of apparatuses of gymnastics, since the alternations of the various exercises and grips, the speed of the giant swings and particularly the spectacular aerial phases in the program, as well as in the exits, make it exciting and popular. Moreover, the fact that this apparatus is the last one in the Olympic series of apparatuses, it is considered to be the crown of the apparatuses by spectators and athletes. It is also important to note that several apparatuses (for women and men) have been enriched with many elements from the horizontal bar (Kaimakamis, 2001).

The fact is that a new apparatus was invented and it won a dominant position in gymnastics and in the German gymnastic system. This is an important reason for somebody to research the historical development and its position in physical education and sports in a critical period for the sports, such as in the first half of the 19th century.

The horizontal bar and the parallel bars were developed and established as the representative apparatuses of the German gymnastic system, since they were connected with a national and political - social ideology. That is why the enemies of these political and social ideologies had under persecution these app-
paratuses (Krüger, 1993; Schmidt, 2011). However, these apparatuses were established, as mentioned above, as the basic gymnastic apparatuses, not only in the German gymnastic system, but also in the competitive and school gymnastics.

This study attempts to research, record and show off the invention and evolution of the horizontal bar in the first half of the 19th century. There was also a study for the position of this apparatus in physical education, in gymnastic systems and in sport generally.

The method used is that of the research field, and the data collection was based on archival and historical research, focused mainly on the forms and technique of construction of the horizontal bar and the type of exercises performed on it. The research, in order to provide fair and objective interpretations, includes a brief reference to the German gymnastic system and its founder in the introductory part.

The data collection of this study was mainly based on the written primary sources of the following authors like Guts Muths (1793), Jahn & Eiselen (1816), Neuendorf, (1837), Pagontas (1837) and others. Sources of several authors of the modern times like Diem (1967), Pahncke (1983), Borrmann (1978), Kaimakamis, (2001) and others were also used. Useful information was derived from the study entitled “Jahn’s horizontal bar and its forerunners”, where various forms of horizontal bars (mainly for acrobatics) are researched, from ancient times until Jahn’s era (Kaimakamis, Kyrialanis, & Kaimakamis, 2011).

BRIEF REFERENCE TO GUTS MUTHS’S AND LUDWIG JAHN’S PRIMITIVE HORIZONTAL BARS

Guts Muths (1759-1839), was the most important person of the Humanism. In his world-wide famous book “Gymnastik für die Jugend (1793)” (gymnastics for young people), he presented a kind of horizontal bar, that looked like the goal – post of football. Apart from the description and the method of manufacture of this apparatus, the author proposes numerous exercises (mainly from hung), but he does not name or classify it in a particular category of gymnastic apparatuses (Guts-Muths, 1793). His compatriot Ludwig Jahn (1778-1852), who is considered to be the “father” of the horizontal bar, did it two decades later.

In the first outdoor, public gymnasium, that opened near Berlin in 1811, Ludwig Jahn, among others, invented, named (Reck), classified and established the horizontal bar as an apparatus. He also proposed and classified the various exercises that could be performed in this new apparatus. This Jahn's first horizontal bar was nothing more than a thick wooden bar, fixed- pinned between two trees (Fig. 1, 2).

Later on, the apparatus was improved and evolved, by Jahn and his students. The above apparatus became popularly known through the book titled “Die Deutsche Turnkunst” by Jahn and Eiselen, published in 1816 (Jahn, & Eiselen, 1816).

Jahn (1816) describes this first horizontal bar as follows: “It is an endurable, round bar, horizontal to the ground, which is fixed on pilasters. Between these pilasters there is a distance greater than the height of a man. For beginners the height of the apparatus must be up to the shoulders or the head of trainees and for advanced ones higher, in order to catch it with bouncing” (p. 147). During the next years the horizontal bar was established, as and the parallel bars, whose founder is also considered to be Jahn, as the dominant apparatus of the German gymnastic system (Borrman, 1978; Krüger, 1993).

THE EVOLUTION OF THE HORIZONTAL BAR IN THE DECADES OF 1830 AND 1840

As the years were passing trainers and trainees, having the collaboration of carpenters constructed more and more stable and easy to use horizontal bars of different heights. In the decades of 1830 and 1840, various forms - variations of wooden horizontal bars (fixed to the ground) were constructed and used. The horizontal bar was stable and with a thinner and stronger bar, and some more complicated exercises were performed in it. More specifically, in these decades, the way of the construction and elaboration...
of the bar and of the horizontal bar generally passed through the following three phases (Spieht, 1989; Gasch, 1920):

**First phase:** for the elaboration of the bar, they used to cut trunks of tall, straight and young trees (pine, beech, elm, maple, and apple); they peeled them and left them dry. Then, they cleaned them well, rubbed them with oil and finally they scraped them with sandpaper. A similar elaboration was followed for the pilasters, which were strong and fixed on the ground.

The exercises, that were performed in this horizontal bar, were static, dynamic and without amplitude and swing. At the same time horizontal bars were manufactured in a straight, polygonal and circular shape (Fig. 3, 4.) (Gasch, 1920).

Figure 5. Pagontas horizontal bar was stable with a wooden bar and pilasters, without the possibility of adjusting the height. (Pagontas 1837, Table of gymnastic shapes.)

**Second phase:** they used to choose trunks of young trees, without knots (predominantly pine, beech, oak) and then they stored them in a dry place for a long time. After the relative elaboration, they stuck two pieces of wood having the so-called “waters” in the same direction. In this way the bar became more endurable. However the bar was still thick and fragile (diameter 6-8cm), so it was difficult for trainees to perform exercises with big swings and amplitude (Schwobe, 1988).

**Third phase:** after the relevant elaboration of the wood, that was going to be a bar, they used to place in the centre of the bar an iron or steel rod, as in a writing pencil. The above bar had more endurance and could be a little thinner, so that it made easy the performance of even more difficult and more complicated exercises, since the handle was more convenient.

During this period, numerous exercises were performed from various positions (mainly from support and hung) and in various ways, like turns, static or dynamic, without great amplitude and swing. Gymnasts performed even more exercises (even if there were a little difference between them) and they did not care if the exercises were useful or difficult.

The horizontal bar was improved, so they performed exercises with amplitude and swing, during the decades of 1830 and 1840. The exits were proportional to the level of exercises, simple and harmless, so the athletes did not use landing mats, but only soil or sand. They performed them after a swing forward or backward (from hung), from removal from support, or with a circle with tuck over the bar. The main grips used were those, which are used nowadays, that are “first-over grip”, “second-under grip”, “third-mixed grip”, “cross grip” and “dorsal grip” (Schwobe, 1988).

In his book, published in Athens in 1837 and entitled “Summary of gymnastics”, George Pagontas (1837) devotes seven pages for the horizontal bar. The author describes the first wooden “fixed” horizontal bar and then he refers to the kinds of exercises and the way of performance in this apparatus. He divides the exercises into two major categories: those performed from hung (swings) and those performed from support. He suggests numerous exercises from various positions and in various ways (hung, pulls, rotations, etc.), which are mostly static and dynamic, without large amplitude and near the axis of rotation (bar) (Fig.5) (Pagontas, 1837).
In 1837 the German Ernst Eiselen (Jahn's student and collaborator) publishes 46 “Gymnastics Tables”, which include apparatuses, exercises and supports. These tables were used for several years by the pre-gymnasts and the trainers of that period as a valuable and helpful manual (Pahncke, 1983).

Regarding Eiselen's horizontal bar, it was an improved “fixed apparatus”, whose bar and the pilasters were wooden. The improvement of the apparatus is obvious in the exercises, whose the main feature is the stretched body and the relatively large swings from the frontal hung (Fig. 6, 7) (Eiselen, 1861; Pahncke, 1983).

Figures 6. & 7. Eiselen's horizontal bar, exercises and support (Eiselen, 1861, p. 82, 86).

THE INTRODUCTION OF THE METAL BAR

According to the German historian Edmund Neuendorff (1875-1961), the first one, who introduced the iron bar in Germany, and perhaps in the whole world, was J. Carl Lion, in 1850. Another author, Wassmannedorff, states that a steel bar was also used in Heidelberg, in 1852 (Neuendorff, 1930). It is certain that in the middle of the 19th century, a rapid development in the horizontal bar exercises is observed, mainly due to the introduction of the metal bar. The persons, who are involved in the sport of gymnastics, know that the quality and functionality of the apparatus has a direct impact in both quality and quantity of the exercises, as well as in the protection-safety of the athletes (Spieth, 1989, Kaimakamis, 2001).

As mentioned above, in the sport of gymnastics the exercises and the apparatuses are in a constant interaction (Gross, & Leikov, 1994). So, since the bar became metal that is thinner, more flexible, more tough and easy to use, the quality of the exercises, the way of performance and the variety of they had changed a lot.

With the introduction of the metal bar, there was not any significant change in the general shape of the horizontal bar. It remained stable on the ground (fixed), with thick wooden pilasters (Fig. 8), and shortly afterwards the metal bar appeared with adjustable height (Fig. 9) (Gregenow, & Samel, 1919).

Figures 8. & 9. Stable horizontal bars with wooden pilasters and metal bar. Part of the pilasters was inside the ground. In the second one there is the possibility of adjusting the height of the bar (Gregenow, & Samel, 1919; p. 7).

This change-improvement, from the wooden to a metal bar, created a shift towards the exercises with more amplitude and swing. Thus, the kip and the giant swings, two spectacular and useful exercises (“key” exercises) appeared, and they were performed by athletes in the years that followed. The giant swing was well known to acrobats of the past years (Grigoras, 1358/1997; Diem, 1967; Kaimakamis, et al., 2011), while it was also displayed in Eiselen's tables (1837, p. 82), but it was not known, if the gymnasts of that era used to perform it. After 1850 the gymnasts began to perform the above exercise more often with A and B grip, that is, forward and backward.

According to the historian of gymnastics Josef Göhler (1987, 1992), the kip was performed by the trainer Karl Kunz for the first time in Leipzig. During the years that followed, this exercise was performed with different variations, even with one hand (the other hand was catching the forearm, with which the athlete was performing).

The new bars had several advantages, but they were still far away from being perfect and effective, since the gymnasts used them soon after they got
them out of the foundry, without making any special elaboration. The gymnasts, in order to avoid slipping of the bar, painted it with a special paint, or wrapped it with a special skin (Gasch, 1920; Spith, 1989). The bar, that was appropriately elaborated, had a diameter of 6-8 cm. From the decade of 1930 and later on the constructors put a special metal plate on the bar that made it tougher.

Since Jahn’s era, the athletes began to use more horizontal bars in a row or in a polygonal shape (hexagon, octagon) and at various heights. The exercises, especially by the end of the decade of 1930, were static, dynamic, and rotational and near the bar, without amplitude and great swing.

**CONCLUSION**

Ludwig Jahn is considered to be the “father” of the horizontal bar, since he invented and named it and he also proposed and classified the various exercises that could be performed on the new apparatus. The first Jahn’s horizontal bar was nothing more than a thick wooden bar fixed- pinned between two trees. Later, it was pinned on two thick wooden pilasters, which were fixed to the ground in various heights and arrangements.

In the first half of the 19th century, the horizontal bar was wooden and stable-fixed on the ground in various forms and dimensions, while the exercises were more static and dynamic, without amplitude and swing, since the use of this apparatus did not allow such exercises. At the same time, various ways of elaborating of the wooden bar were invented, in order to make it strong, flexible and easy to use.

In the middle of the 19th century the metal bar was widely used, and it had a direct impact in the exercises. So, since then, exercises with great amplitude and swing were performed, together with the static and dynamic ones.

**REFERENCES**

Zusammenfassung

Schlüsselwörter: JAHN / PFOSTEN / HOLZSTANGE / DYNAMISCH-STATISCHE ÜBUNGEN