

# THE PUNCTUATION SYSTEM OF THE MEN'S ARTISTIC GYMNASTICS (MAG) – GRAPHICS AND MATHEMATICAL MODELS

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## **Abstract:**

The rules for the Men's Artistic Gymnastics (MAG), mainly the Punctuation Code (PC), establish a peculiar way to assess the exercises, what is called System of Punctuation. The complexity of this system is recognized by the coaches, especially by the younger ones, by the investigators and also by the International Gymnastics Federation (FIG, 1985). This complexity is associated to nature of the evaluation process typical from the Artistic Gymnastics practiced by the external referees, under qualitative criteria and exposed to several problems related to the human perception. We have studied mathematically this system of punctuation, classifying its variables and finally establishing the equation which gives the final punctuation of the exercise. Afterwards we have elaborated some graphics models which intends to express the results visually, considering the points precedence: elements performed (positive part of the punctuation) and penalties (negative part). Theses models, called by Parlebas (2001) of "mark support", are created to hold the punctuation possibilities (marks) which the rules permit, not letting failures at the moment to determine the final punctuation of the gymnast. As final considerations for this preliminary study we can highlight: a) the graphic models purposed to make the visualization of the results easier in significantly way and its visual comparison being a useful and easy tool to be used; b) we believe that the next step for the model consolidation, for both uses at the practical (practice) and theoretical (investigation) field, needs computerized programs to be created to facilitate the data input, assessment and graphic design; c) we also believe that the models, even though is passing through a process of creation, contributes to the coaches and referees labor, as some other tools which already exists, for example the program "Gymnastics Data Base Examen 2001" created by the professors Ivan Cuk and Ales Borstnik from the Sport Faculty (College) from the University of Ljubljana (Slovenia), and which makes easier the referee learning and practice in this modality.

**Keywords:** Men's Artistic Gymnastics, Punctuation System, Graphics and Mathematical Models