Analysis of the elements in floor exercises in women artistic gymnastics
- A study in national and international junior gymnasts

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Introduction
The Women Artistic Gymnastics (WAG) is a demanding sport, where the technique assumes a primordial role. The technical requirements of this sport have been permanently changing, expressed in the actual Code of Points (FIG, 2001a) that was made to turn WAG an appealing and updating sport.

The purpose of this investigation was an analysis and comparison of the value parts and high difficulty elements performed in the Floor Exercises in Portuguese gymnasts and participants in an important European competition (European Youth Olympic Days - EYOD). With this analysis, we pretend to identify which the most decisive aspects to develop in national gymnasts, to achieve an approach to the international pattern.

Methodology
Seventy female gymnasts constituted the sample of our study, with ages between thirteen and fifteen years old (junior gymnasts) of WAG, participants in EYOD in Murcia (n=60) and in the National Championships of Portugal (n=10). The evaluation of Floor Exercises presented by the gymnasts was based on the parameters in the Code of Points of FIG (2001a) and through the analysis of the contents of the Floor Exercises. The variables were: (i) presentation of the value parts (A, B and C) and (ii) accomplishment of elements of superior difficulty (D, E and superE).

Results
By the analysis and taking as reference measure the average, we can find a larger predominance of A elements in the two events studied (Portugal - X=5.30 A elements and EYOD X=4.45 A elements). The value part less used in the Floor Exercises of our study, expressed different average values in EYOD and National Championships of Portugal. In EYOD the value part less used was B elements (X=2.25 elements), and to the Portuguese gymnasts, C elements showed low values, where the average achieve 3.20. Indeed, when we compare Portugal/EYOD we verified statistic differences corresponding to the B elements, where the Portuguese gymnasts have higher averages values. With a profound analysis we verified that the differences were in the acrobatic B elements. Relatively to the high difficulty elements D, E and superE, we can affirm that the gymnasts of EYOD evidenced higher average values in this elements than Portuguese gymnasts, specially in D and E elements. After a more detailed analysis of D elements, we can affirm that 5% of portuguese gymnasts performed acrobatic D elements and 7% performed dance D elements. While in EYOD, 18% of the gymnasts included acrobatic D elements on their floor exercises, and 15% performed dance D elements.

Conclusions
The most performed value parts in floor exercise of Portuguese gymnasts were A, B and C. While, the gymnasts participants in EYOD, included with more frequency on there exercises A, C and B elements. In the last value part, in the comparative analysis between Portugal/EYOD, there were significant statistic differences between both average values, where the Portuguese gymnasts showed higher values. Differentiating the dance value parts from acrobatics value parts, we concluded that all gymnasts included more A acrobatic elements, B dance elements and C dance elements. The supremacy of the A acrobatic elements was related with all acrobatic series contain, usually, more than two acrobatic elements of A value. Portuguese gymnasts did not include E elements in their floor exercise, and the average values of D and E elements were very low in Portuguese gymnasts, when we compare both groups of gymnasts.

References