Is there a generalization of balance ability for elite gymnasts?
Asseman F., Caron O. et Crémiieux J.
Laboratory E.S.P.-EA3162-UFRSTAPS University of South Toulon-Var

Introduction:
A good postural control is essential for the execution of a variety of sport skills and especially in gymnastics. The transfer of this kind of ability to usual postures is not automatic [1]. The aim of this study was to analyze if there is an effect of gymnasts’ expertise, including the mastering of various difficult postures, on postural performance and control. For that purpose, the balance of elite gymnasts was firstly compared to other sportsmen with the eyes open in two postures. One of these, the unipedal, was more difficult and considered as little specific to gymnasts. Then, to study if the expertise in gymnastics influence the effect of vision removal on postural performance, the subjects were compared in the same postures but with the eyes closed.

Methods:
- 13 elite gymnasts (G) and 13 other sportsmen (OS).
- 32s Force plate recordings (frequency 120 Hz).
- 2 postural tasks: Bipedal (B), Unipedal (U) each with Eyes Open (EO) and Eyes Closed (EC); 5 trials per condition.
- Center of pressure measures (CP): Surface S (mm²) and Mean Velocity V (mm/s). RS and RV are the ratios of values (EC/EO)*100 for each variable.
- ANOVA including three factors (group, posture and vision) with p<0.05.

Results:
- Significant difference between OS and G for postural performance estimated by S [2] only in the U posture with EO. No difference for postural control estimated by V [2].
- No significant difference between OS and G for RS and RV whatever the posture B or U.

Discussion:
The expertise in gymnastics seems to have an effect only on postural performance in a postural configuration (unipedal) and also in a visual condition (eyes open) for which they were trained. So it doesn’t seem to have a generalization of postural ability developed by elite gymnasts in bipedal postural control. Further experimentation will test if this effect is due to the level of expertise itself or just to the practice of gymnastics.

References: