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1010. Precompetitive Stress In Rhythmic Gymnasts Assessed By Using Salivary Alpha-amylase, Protein And Potassium

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Disclosures

S. Kolimechkov: None.

Abstract

Stress and adaptation are primary components of training and competitions in rhythmic gymnastics. This sport requires gymnasts to demonstrate maximum physical effort under great psychological pressure. Non-invasive biomarkers, such as salivary alpha-amylase (sAA), function as useful indicators of stress in acute and chronic stress studies. **PURPOSE**: To assess the pre-competitive stress levels in rhythmic gymnasts by using non-invasive biochemical methods and anxiety questionnaires.

METHODS: The study included 10 rhythmic gymnast competitors (age: 14.7±1.57 years), at the Bulgarian Rhythmic Gymnastics Championships. Saliva was collected by using cotton swab salivates without salivary stimulation at three different times: at home nine days pre-competition (baseline), before a training session five days pre-competition, and just before the competition. The sAA activity and the concentration of salivary protein (sP) and salivary potassium (K^+) were measured. Trait and state anxiety were evaluated by using the Spielberger State-Trait Anxiety Inventory. Comparisons were made using one-way ANOVA with repeated measures.

RESULTS: The mean state anxiety score was significantly higher before the training session in contrast to the baseline, 36.90±11.03 vs 30.80±10.26, $p<0.05$ and before the competition, 40.10±9.57 vs 30.80±10.26, $p<0.05$). The mean sAA activity was 5.89±0.75 ln(U/mL) at baseline, and increased significantly to 6.56±0.58 ln(U/mL) just before the training session ($p<0.05$), and it was 6.90±0.70 ln(U/mL) before the competition ($p<0.05$ vs baseline). The mean sP concentration increased progressively but the differences were not significant 1.84±0.70 [g/L] vs 2.28±0.97 [g/L] vs 2.91±1.44 [g/L], respectively. The mean salivary K^+ concentration was significantly higher before the competition vs the baseline value (35.73±8.3 mmol/L vs 23.94±4.83 mmol/L, $p<0.01$).

CONCLUSIONS: The sAA activity and salivary K^+ concentration were both in agreement with the anxiety scores, and they can be applied as useful non-invasive biomarkers of stress. A combination of psychological, biochemical and physiological indicators should be used to establish a comprehensive assessment of stress in competitive sport.