Physical and psychological symptoms of stress: effects of acute stretching exercise and music listening

Valim-Rogatto Priscila C, Rogatto Gustavo P
Laboratory of Research in Exercise Psychology, Faculty of Physical Education, Federal University of Mato Grosso, Cuiabá, Brazil

Introduction
In the life sciences, stress is viewed as an unbalance in physiological systems that results in physiological and behavioral responses to restore the organic homeostasis. These responses can be characterized by painful physical symptoms, such as muscle strain and headache; physiological signs such as high blood pressure and behavioral or psychological symptoms such as anxiety and fear (Buckwoorth and Dishman, 2002). However, individuals differ greatly in the way they perceive and react to potential stressors (Tenenbaum et al., 2003). Moreover, people can present physical and psychological symptoms combined or isolated. Previous studies have shown that some relaxation techniques can be effective for treating certain stress symptoms. Specific-effects Hypothesis (Berger, 1994) confirms this point, explaining that somatic techniques, such as Yoga and Jogging are more effective for reducing physical symptoms and cognitive techniques are more effective for reducing psychological symptoms. Relaxation music listening is also used as a therapeutic tool to treat psychological symptoms such as anxiety and physical symptoms such as high heart rate. The aim of this study was to analyze the acute effects of stretching exercise and music listening on physical and psychological symptoms related to stress in young people.

Methods
One hundred and thirty eight young male and female individuals 17-22 years old were randomly assigned to experimental situations: stretching exercise (S), music listening (M), stretching exercise with music (SM) and control condition (C). The participants of S group performed one acute active stretching exercise session. N group listened to a New Age style music sequence. SM group performed the same stretching exercise session proposed for S group associated to the same music listening proposed to M group. Total amount of time of each experimental condition was 30 minutes. The Lipp’s Stress Symptoms Inventory (LSSI) evaluated the stress symptoms (Lipp, 2000). All participants asked the LSSI before and after their specific experimental condition. Data were analyzed by non-parametric Wilcoxon test. The level of significance of at least p<0.05 was chosen for all statistical comparisons.

Results
Results showed reduction of both physical and psychological symptoms in S (by 26.5% and 16%, respectively, p<0.01) and SM (by 21.2% and 13%, respectively, p<0.01) groups (Table 1). M and C groups did not show any change of the number of stress symptoms acutely.

<table>
<thead>
<tr>
<th>Experimental Conditions</th>
<th>Physical Symptoms</th>
<th>Psychological Symptoms</th>
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<tr>
<td></td>
<td>Before</td>
<td>After</td>
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<tr>
<td>S (n=31)</td>
<td>7.5 (3.26)</td>
<td>5.51 (2.99)</td>
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<tr>
<td>M (n=36)</td>
<td>9.19 (3.80)</td>
<td>8.50 (3.76)</td>
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<td>SM (n=42)</td>
<td>9.02 (4.52)</td>
<td>7.11 (4.90)</td>
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<td>C (n=29)</td>
<td>7.31 (3.85)</td>
<td>7.58 (4.63)</td>
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Table 1. Data of Wilcoxon Test (z) related to physical and psychological symptoms of each experimental condition. *p<0.01. **p<0.0001. Results are presented as mean (standard deviation).

Discussion/Conclusion
Contrary to the Specific-effects Hypothesis, the results of the present study indicated that stretching exercise with or without music can be an important tool for reducing both types of stress symptoms (physical and psychological), confirming the “unity body/mind”. According to the classical studies, music can contribute to stretching exercise providing motivation and acting as a distractor from unpleasant stimuli. However, our results showed that music, as an isolated technique did not influence the number of stress symptoms in young individuals. The results of the present study shows that, compared to music listening, stretching exercise can be useful to manage stress.

References
Buckworth J, Dishman R K (2002). Exercise psychology