Whole body vibration as pelvic floor muscle training: Preliminary trial

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INTRODUCTION AND AIM

Studies report that whole-body vibration recruits about 95-97% of the muscle fibers due to the oscillations generated by the vibrating platform, which can enable to reach both surface and deep muscles. Lauper (2009) reported that the active vibration of the pelvic floor muscles (PFM) could improve their reflex stimulation and coactivation. Aim: The aim of this study was to investigate the effect of whole body vibration on the PFM electromyographic activity as well as to compare it with the control group.

PATIENTS AND METHODS

Study design: A controlled and prospective study was approved by the regional Ethics Review Board (CAEE:355628/14.0.0000.5404).

Participants: Twenty one women were evaluated by digital palpation (Oxford Modified Grading Scale) and all of them were able to contract their PFM. Exclusion criteria: women who had urogynecological symptoms, prior abdominal or pelvic surgery, any pelvic organ prolapse, diabetes, hypertension, neurological abnormalities, myopathy, chronic lung diseases and/or urinary tract infection.

PFM Assessment: Was performed through surface electromyography (EMG System do Brasil®) using a vaginal probe (Physio-Med Services®). We requested three voluntary maximal and subsequent PFM contractions, with a rest period, twice the time of the maximum contraction, between each contraction.

Five seconds of each contraction was recorded, in microvolts and analyzed by the Root-Mean-Square (RMS), where the arithmetic mean of three RMSs was considered per analysis.

Randomization and intervention protocols: The women were randomly divided into two groups: Control group (CG) (n=11), who received a booklet with exercise information that could be performed at home and whole body vibration training group (WBVG) (n=10), who performed 10 supervised individual sessions, using the vibration platform PulseVibe3® with a frequency of 20Hz and an intensity of P5, twice a week and for 30 minutes each. Six exercises were performed in each session during 45 seconds followed by other 45 seconds of rest as shown in Figure 1.

RESULTS

Demographic and clinical characteristics: Most of the women reported being single (66.6%), having white skin color (95.2%), higher educational level (80.9%) and absence of labor activity (52.3%). Moreover, the participants had a mean age of 33.28 (±9.17) years and a body mass index of 23.54 (±3.39).

Main outcome: Table I shows the PFM electromyographic activity’s mean values (in microvolts), obtained pre and post intervention, as well as comparing the both groups.

<table>
<thead>
<tr>
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<th>EMG Pre. Mean (±SD)</th>
<th>EMG Post Mean (±SD)</th>
<th>p-value Time (Power/Effect)</th>
<th>p-value Difference between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group (n=11)</td>
<td>52.42 (±13.91)</td>
<td>45.91 (±15.96)</td>
<td>*0.15 (0.60/1)</td>
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<tr>
<td>Whole body vibration</td>
<td>44.04 (±18.64)</td>
<td>48.50 (±23.78)</td>
<td>**0.51 (0.5/0.4)</td>
<td>**0.16</td>
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<td>group (n=10)</td>
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SD = Standard Deviation; *Paired t test; **Unpaired t test. The significance level was 5%.

CONCLUSION

Considering the study as being preliminary, we were not able to conclude if the whole body vibration training could promote an increase in pelvic floor muscle electromyographic activity. Thus, we suggest to carry out further studies that could investigate better this hypothesis.

REFERENCE:

Acknowledgements