THE EFFECT OF MUSIC ON HEART RATE AND MOTION ARTEFACTS DURING GAMMA CAMERA ACQUISITION FOR MYOCARDIAL PERFUSION SCINTIGRAPHY

AIM
To evaluate the effect of music composed with the purpose of being calming on: heart rate, motion artefacts, and patient well-being during image acquisition in myocardial perfusion imaging.

BACKGROUND AND METHODS
Music has been used in combination with treatment through thousands of years especially in Arabian countries, India, Greece and China. Music is used for reducing patient anxiety during surgical procedures and neuropsychological treatments. Our test hypothesis was that music can relax patients during gamma camera acquisition of myocardial perfusion scintigrams and thus improve imaging and patient well-being simultaneously.

124 patients referred for myocardial perfusion imaging on the suspicion of ischemic heart disease were included in a randomised cross over study. Only studies with successful gating at both rest and stress image acquisition were included. 50 patients listened to music during acquisition of rest images and without music during stress image acquisition and 51 patients did vice versa. The study comprised 50 women and 51 men. Patients with reduced hearing, arrhythmia and/or pacemaker, dementia or dyslexia were not included.

After the perfusion scintigraphy was performed the patients were asked to fill out a questionnaire on their opinion of the effect of the music.

RESULTS
Among patients who did not listen to music there was a significant decline in heart rate during stress image acquisition (Table 1). This decline in heart rate was significant for women alone: 4.2 (±5.9) bpm, (p=0.01) but not for men: 2.4 (±4.7) bpm, (p=0.3). Regardless of music being played or not there was no significant effect on heart rate during rest acquisition and there was no difference in the frequency or severity of motion artefacts. 92% of the patients preferred to listen to music during image acquisition (Figure 1), and 51% would prefer free choice of music. (Figure 2). 79% of the patients declared that the music had a calming effect. 18% no effect, and 3% found it to be distressing (Figure 3).

CONCLUSION
Listening to music during image acquisition for myocardial perfusion scintigraphy after stress test prevents a decline in heart rate particularly among women and has no adverse effects on the frequency and severity of motion artefacts. A more stable heart frequency during acquisition may in theory improve the quality of quantitative analyses. Overall, music can be recommended during image acquisition since a vast majority of patients preferred to listen to music and no increase in motion artefacts could be shown.

Table 1

<table>
<thead>
<tr>
<th>Change in HR during rest acq. (bpm)</th>
<th>Mean (± 1 SD)</th>
<th>t-test</th>
<th>P</th>
<th>Mean (± 1 SD)</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music at stress (N = 51)</td>
<td>0.5 (6.1)</td>
<td></td>
<td></td>
<td>0.1 (6.1)</td>
<td></td>
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<tr>
<td>Music at rest (N = 50)</td>
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</table>

Figure 1

Preferences to listen to music during acquisition

Figure 2

Preferences to free choice of music

Figure 3

Effect of music evaluated by the patients

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