The Effects of Laughter Therapy on Autonomic Nervous System Activity and Stress in Smartphone Addict

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Abstract. To investigate whether laughter therapy improves autonomic nervous system activity, stress, readiness for change, and emotions in smartphone addict. Participants were randomly allocated to laughter therapy group (n=30) and control group (n=12). Laughter therapy group was performed program 3 times per week for 4 weeks. Laughter therapy group showed significantly improved autonomic nervous system activity and stress compared with control group. This study suggests that laughter therapy is feasible and effective for improved the psychologic health in smartphone addict.

Keywords: Laughter therapy; Autonomic nervous system; Stress; Emotions; Addiction.

1 Introduction

The rapid spread of smartphones cause various adverse effects besides convenience in the use of device. Accordingly, the seriousness of problem recently has come to the fore as the concept of smartphone addiction [1].

Laughter which uses humor to reduce stress, decrease pain and improve quality of life has become a trend therapy in recent study [2,3]. The merits of laughter therapy is easy to prescribe and do not require side concerns with respect allergies, dose, side effects [4]. Stress has been considered as an inhibiting factor of the immune system and increases risk of heart disease through the continuous production of stress related hormone such as catecholamines and cortisol [5].

However, not much is known about the association between Laughter and addiction. The aim of the present study was to identify the effect of laughter therapy on smartphone addiction as determined by autonomic nervous system (ANS) activity and stress.
2 Methods

2.1. Participants

This study was designed as RCT, and was carried out for students at S university located in Seoul. Students in physical therapy and nursing major were tested with smartphone addiction proneness scale for adults: self-report. And students belonging to addiction risk group (a score of 40 or higher) and addicted group (a score of 44 or higher) were recruited.

2.2. Experimental procedure

With regard to participants who matched the eligibility, 1 week before the start of intervention, ANS activity, stress index, stress resistance and readiness for change, and current emotions was measured. And one is picked out from cards with number “1” or “2” in the envelope, and they were allocated to laughter therapy group (n=30) and control group (n=10). The laughter therapy group has been in laughter therapy for 4 weeks (3 sessions per week, and 60 minutes per session). And a total of 12 sessions of therapy were accomplished. There was no special treatment for control group. After the end of laughter therapy, a post-test measurement was made by the same method as that of pre-test measurement.

2.3. Intervention

Laughter therapy

Laughter therapy consists of opening, experiencing laughter and closure. And opening is warm-up time, and reduces aversion to laughter by laughing variously together. Experiencing laughter is subdivided into laughter, affirmation, thank and concentration.

2.4. Data analysis

Data obtained through the survey and evaluation was analyzed by using SPSS ver. 19.0 program for statistical processing. In order to check the homogeneity of two groups, chi-square test and independent t-test was carried out. And ANS activity, stress index and stress resistance was analyzed through ANCOVA. The significance level of all statistics was set for 0.05.

3 Results

The demographic characteristics of both groups were assessed and no significant differences between the laughter therapy group and the control group (Table 1).
Table 1. Characteristics of subjects

<table>
<thead>
<tr>
<th></th>
<th>Laughter therapy group (n=30)</th>
<th>Control group (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (male/female)</td>
<td>11 / 19</td>
<td>3 / 9</td>
</tr>
<tr>
<td>Age (year)</td>
<td>20.33 ± 1.80</td>
<td>20.33 ± 1.72</td>
</tr>
<tr>
<td>Heart rate</td>
<td>79.47 ± 10.53</td>
<td>81.74 ± 10.27</td>
</tr>
<tr>
<td>Major (PT/N)</td>
<td>16 / 14</td>
<td>8 / 4</td>
</tr>
<tr>
<td>Grade (1/2/3/4)</td>
<td>17 / 6 / 7 / 0</td>
<td>4 / 8 / 0 / 0</td>
</tr>
<tr>
<td>Duration (month)</td>
<td>49.83 ± 21.88</td>
<td>50.67 ± 17.07</td>
</tr>
<tr>
<td>Time (min)</td>
<td>378.97 ± 186.94</td>
<td>357.75 ± 62.47</td>
</tr>
<tr>
<td>Self-addiction assessment scale</td>
<td>40.97 ± 1.71</td>
<td>41.75 ± 3.25</td>
</tr>
<tr>
<td>Self-addiction questionnaire (yes/no)</td>
<td>22 / 8</td>
<td>6 / 6</td>
</tr>
</tbody>
</table>

Values are presented as mean ± SD. PT=physical therapy; N=nursing

Laughter therapy group was improved to ANS activity, stress index, and stress resistance compared with control group (p<0.05) (Table 2).

Table 2. Changes in ANS activity and stress between the laughter therapy group and the control group.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Laughter therapy group (n=30)</th>
<th>Control group (n=12)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>SN activity</td>
<td>55.43 ± 20.31</td>
<td>50.32 ± 20.58</td>
<td>52.90</td>
<td>49.82</td>
</tr>
<tr>
<td>PSN activity</td>
<td>44.57 ± 20.31</td>
<td>49.68 ± 20.58</td>
<td>47.10</td>
<td>50.18</td>
</tr>
<tr>
<td>Stress index</td>
<td>46.75 ± 39.95</td>
<td>38.13 ± 25.14</td>
<td>53.16</td>
<td>53.89</td>
</tr>
<tr>
<td>Stress resistance</td>
<td>44.96 ± 16.19</td>
<td>44.92 ± 14.81</td>
<td>37.66</td>
<td>37.65</td>
</tr>
</tbody>
</table>

Values are presented as mean ± SD. ANS=autonomic nervous system; SN=sympathetic nerve; PSN=parasympathetic nerve.

4 Discussion

This study was suggested that laughter therapy is improved to ANS activity, stress, and positive affect in smartphone addict. Many studies revealed that laughter therapy positively influenced human health. Laughter therapy has very few side effects, so that they are accepted generously in the world [6]. Research on laughter therapy with various kinds of study subjects suggested that the therapy positively influenced not only psychological aspects, such as stress, anxiety, depression, but also physiological...
and psychosocial aspects, including immune system, pain threshold, and stress reaction [7,8].

Stress has continued to be defined as an element that changes psychological and physiological functions. A study reported that excessive immersion on smartphone caused anxiousness and anxiety which developed into stress in daily life [9]. This study found that smartphone addicts were measured to have high stress index prior to test, and that the laughter therapy group decreased their stress index significantly after laughter therapy.

5 Conclusion

In conclusion, laughter therapy can be used in the smartphone addict to improve psychological health.

References