**Supplementary Material**

A Systematic Review of Rehabilitation for Corticobulbar Symptoms in Adults with Huntington’s Disease

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| **S I G N** | | 1. **Methodology Checklist 2: Controlled Trials** | | | | | | |
| Study identification (Include author, title, year of publication, journal title, pages)  **Reyes, A., et al. (2015). "Respiratory muscle training on pulmonary and swallowing function in patients with Huntington's disease: a pilot randomised controlled trial." Clinical Rehabilitation 29(10): 961-973.** | | | | | | | | |
| Guideline topic: Corticobulbar rehabilitation in Huntington’s disease. | | | | Key Question No:  PROSPERO CRD42017064156 | | Reviewer:  Burnip, E.  Wallace, E. | | |
| **Before** completing this checklist, consider:   1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+ 2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist. | | | | | | | | |
| Reason for rejection: 1. Paper not relevant to key question □ 2. Other reason □ (please specify): | | | | | | | | |
| 1. **Section 1: Internal validity** | | | | | | | |
| ***In a well conducted RCT study…*** | | | | | 1. ***Does this study do it?*** | | |
| 1.1 | The study addresses an appropriate and clearly focused question. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.2 | The assignment of subjects to treatment groups is randomised. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.3 | An adequate concealment method is used. | | | | Yes □  Can’t say ⮽ | | No □ |
| 1.4 | The design keeps subjects and investigators ‘blind’ about treatment allocation. | | | | Yes □  Can’t say ⮽ | | No □ |
| 1.5 | The treatment and control groups are similar at the start of the trial. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.6 | The only difference between groups is the treatment under investigation. | | | | Yes □  Can’t say ⮽ | | No □ |
| 1.7 | All relevant outcomes are measured in a standard, valid and reliable way. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? | | | | 0% | | |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). | | | | Yes □  Can’t say ⮽ | | No □  Does not apply □ |
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites. | | | | Yes □  Can’t say ⮽ | | No □  Does not apply □ |
| **Section 2: OVERALL ASSESSMENT OF THE STUDY** | | | | | | | |
| 2.1 | 1. How well was the study done to minimise bias? 2. *Code as follows:* | | High quality (++)□  Acceptable (+)⮽  Low quality (-)□  Unacceptable – reject 0 □ | | | | |
| 2.2 | Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? | | Certain. Overall well controlled for bias. Outcome measures described and reported in detail. | | | | |
| 2.3 | Are the results of this study directly applicable to the patient group targeted by this guideline? | | Yes. | | | | |
| 2.4 | **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. | | | | | | |
|  | A four month home-based respiratory muscle training programme resulted in improvements in several respiratory outcome measures. It showed some benefits to overall pulmonary function in a neurodegenerative condition (specifically Huntington’s disease). The authors report a moderate positive effect of training and a trivial effect for the control group.  This study had a small sample size and no results reached statistical significance. There was improvement in respiratory outcome measures, time per swallow and SWAL-QoL for intervention group. The authors commented that training did not improve swallowing function, however, no instrumental measurements of swallowing were included in this study. | | | | | | |

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| **S I G N** | | 1. **Methodology Checklist 2: Controlled Trials** | | | | | | |
| Study identification (Include author, title, year of publication, journal title, pages)  **Leng, T. R., et al. (2003). "Effects of multisensory stimulation in people with Huntington's disease: a randomized controlled pilot study." Clinical Rehabilitation 17(1): 30-41.** | | | | | | | | |
| Guideline topic: Corticobulbar rehabilitation in Huntington’s disease. | | | | Key Question No:  PROSPERO CRD42017064156 | | Reviewer:  Burnip, E.  Wallace, E. | | |
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| 1. **Section 1: Internal validity** | | | | | | | |
| ***In a well conducted RCT study…*** | | | | | 1. ***Does this study do it?*** | | |
| 1.1 | The study addresses an appropriate and clearly focused question. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.2 | The assignment of subjects to treatment groups is randomised. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.3 | An adequate concealment method is used. | | | | Yes □  Can’t say □ | | No ⮽ |
| 1.4 | The design keeps subjects and investigators ‘blind’ about treatment allocation. | | | | Yes □  Can’t say | | No ⮽ |
| 1.5 | The treatment and control groups are similar at the start of the trial. | | | | Yes □  Can’t say ⮽ | | No □ |
| 1.6 | The only difference between groups is the treatment under investigation. | | | | Yes □  Can’t say □ | | No ⮽ |
| 1.7 | All relevant outcomes are measured in a standard, valid and reliable way. | | | | Yes ⮽  Can’t say □ | | No □ |
| 1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? | | | | 17% | | |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). | | | | Yes □  Can’t say □ | | No □  Does not apply ⮽ |
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites. | | | | Yes □  Can’t say □ | | No □  Does not apply ⮽ |
| **Section 2: OVERALL ASSESSMENT OF THE STUDY** | | | | | | | |
| 2.1 | 1. How well was the study done to minimise bias? 2. *Code as follows:* | | High quality (++)□  Acceptable (+)□  Low quality (-)⮽  Unacceptable – reject 0 □ | | | | |
| 2.2 | Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? | | Not certain. There are several other variables which may contribute to observed results. The reasoning behind statistical methods was described in detail in the appendix. This shows the decisions made to select the most efficient method to attempt to measure a treatment effect, however, they authors acknowledge that the small sample size is not ideal to fully answer the question. | | | | |
| 2.3 | Are the results of this study directly applicable to the patient group targeted by this guideline? | | Yes, population specific | | | | |
| 2.4 | Notes. Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. | | | | | | |
|  | The authors reported some positive effects in mood and stimulation levels within sessions. Due to the variability of the participants at Stage V or late HD (profoundly impaired and requiring total care), it is difficult to say how well matched the treatment and control groups are. The main issues are with identified variables in the form of missing data was due to difficulties collecting physiological measurements and 17% drop out rate and changes in medication regime during the eight weeks of treatment. There were no statistically significant differences between the treatment and control groups between sessions. The clinical significance of these findings are not fully understood and further development of the methods and protocol would be beneficial.  This study was included in this systematic review as it aimed to stimulate the olfactory cranial nerve as part of treatment. This may not be clinically significant in relation to rehabilitation of other corticobulbar symptoms such as dysarthria and dysphagia. | | | | | | |