**Supplementary file 1.**

**Reasons for excluded studies**

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| N | Author, Year | Reason for exclusion |
| 1 | St George et al, 2014 [1] | No neuropsychological outcomes. |
| 2 | Odekerken et al. 2013 [2] | No neuropsychological outcomes. |
| 3 | Rocchi et al. 2012 [3] | No neuropsychological outcomes. |
| 4 | Dietz et al. 2013[4] | Assessing GPi-DBS only |
| 5 | Weaver et al. 2012[5] | Data overlap Rothlind et al study [6] |
| 6 | Robertson et al. 2011[7] | Irrelevant |
| 7 | Locke et al. 2011[8] | No neuropsychological outcomes |
| 8 | Follett et al. 2010[9] | Data overlap with Rothlind et al study [6] |
| 9 | Mann et al. 2009[10] | No neuropsychological outcomes |
| 10 | Weaver et al. 2009[11] | Data overlap with Rothlind et al study [6] |
| 11 | Hariz et al. 2008[12] | No neuropsychological outcomes |
| 12 | Anderson et al. 2005[13] | No neuropsychological outcomes |
| 13 | Escamilla-Sevilla et al., 2004 [14] | No neuropsychological outcomes |
| 14 | Volkmann et al. 2004[15] | Assessing GPi-DBS only. |
| 15 | Rocchi et al. 2004[16] | No neuropsychological outcomes |
| 16 | Okun et al. 2003[17] | No neuropsychological outcomes |
| 17 | Moro et al. 2002 [18] | No neuropsychological outcomes |
| 18 | Limousin et al. 1995[19] | No neuropsychological outcomes |
| 19 | Zahodne et al 2009[20] | Data overlap. |
| 20 | Vesper et al. 2012[21] | Irrelevant |
| 21 | [22] | No neuropsychological outcomes |
| 22 | Kruase et al. 2001[23] | No neuropsychological outcomes |
| 23 | Hristova et al. 2000[24] | No neuropsychological outcomes |
| 24 | Burchiel et al. 1999[25] | No neuropsychological outcomes |
| 25 | Gálvez-Jiménez et al 1998[26] | Assessing GPi-DBS only |
| 26 | Duff et al. 1997[27] | Irrelevant |
| 27 | Witt et al. 2013[28] | Assessing STN-DBS only |
| 28 | Sáez-Zea et al. 2012[29] | Assessing STN-DBS only |
| 29 | Chang et al. 2012[30] | Assessing STN-DBS only |
| 30 | Phillips et al. 2102[31] | Assessing STN-DBS only |
| 31 | St George et al. 2012[32] | No neuropsychological outcomes |
| 32 | McDonald et al. 2012[33] | Assessing STN-DBS only |
| 33 | Elena Moro et al. 2010[34] | No neuropsychological outcomes |
| 34 | Péron et al. 2010[35] | Assessing STN-DBS only |
| 35 | Mikos et al. 2010[36] | Present the data as DBS group without separating STN & GPi group |
| 36 | Volkmann et al. 2009[37] | No neuropsychological outcomes |
| 37 | York et al. 2008[38] | Assessing STN-DBS only |
| 38 | Rodriguez-Oroz et al. 2005[39] | No neuropsychological outcomes |
| 39 | Burdick et al 2011[40] | No neuropsychological outcomes |
| 40 | Zahodne et al. 2009[41] | Present the data as DBS group without separating STN & GPi group |
| 41 | Castelli et al. 2008[42] | Assessing STN-DBS only |
| 42 | Volkmann et al. 2001[43] | No neuropsychological outcomes |

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