Supplementary ALE meta-analysis

Here we present the results of a supplementary ALE meta-analysis in which we included two extra PET-studies, on top of the 11 studies reported in the main body text. In these two studies postural tasks were actually performed while standing upright (Ouchi et al., 2001; Ouchi et al., 1999). However, a field of view was used in these studies that did not cover the whole brain.

**Results**

Experiment characteristics

The characteristics of these PET studies are shown in **Supplementary table 3.** Together with the studies included in the main analysis, 20 experiments coming from 13 studies were included. After pooling the experiments per study, the supplementary ALE meta-analysis involved 178 subjects with on average 13.7 subjects per experiment.

Supplementary table 3. Characteristics of the experiments included in the supplementary ALE meta-analysis

Study	N subjects	Contrast
Ouchi et al. (1999)	8	Bilateral stance > supine Unilateral stance > supine Tandem stance > supine Tandem stance > bilateral stance
(Ouchi et al., 2001)	8	Bilateral stance > supine Bilateral stance > sitting

Supplementary ALE meta-analysis

Convergence of foci was present in the anterior and posterior cerebellar lobes (cluster 1 and 2) and the middle occipital gyrus (cluster 3, see **Supplementary Figure 1** and **Supplementary Table 4)**. Six experiments contributed to cluster 1 in the cerebellar anterior lobe (Ferraye et al., 2014; Jahn et al., 2004; Mouthon et al., 2018; Ouchi et al., 1999; Slobounov et al., 2006b; Taube et al., 2015). Compared to the main analysis, this cluster contained an extra peak coordinate and increased in volume. Four experiments contributed to cluster 2 in the anterior and posterior cerebellar lobes, including lobes 4-6 (Jahn et al., 2008; Jahn et al., 2004; Mouthon et al., 2018; Ouchi et al., 1999). Most voxels in the anterior and posterior cerebellar lobe cluster were within the declive and culmen and were also considered to be part of the vermis. Four experiments contributed to cluster 3 in the middle occipital lobe, which also comprised a small part of the inferior and middle temporal gyri (Mouthon et al., 2018; Slobounov et al., 2006a; Slobounov et al., 2006b; Taube et al., 2015).
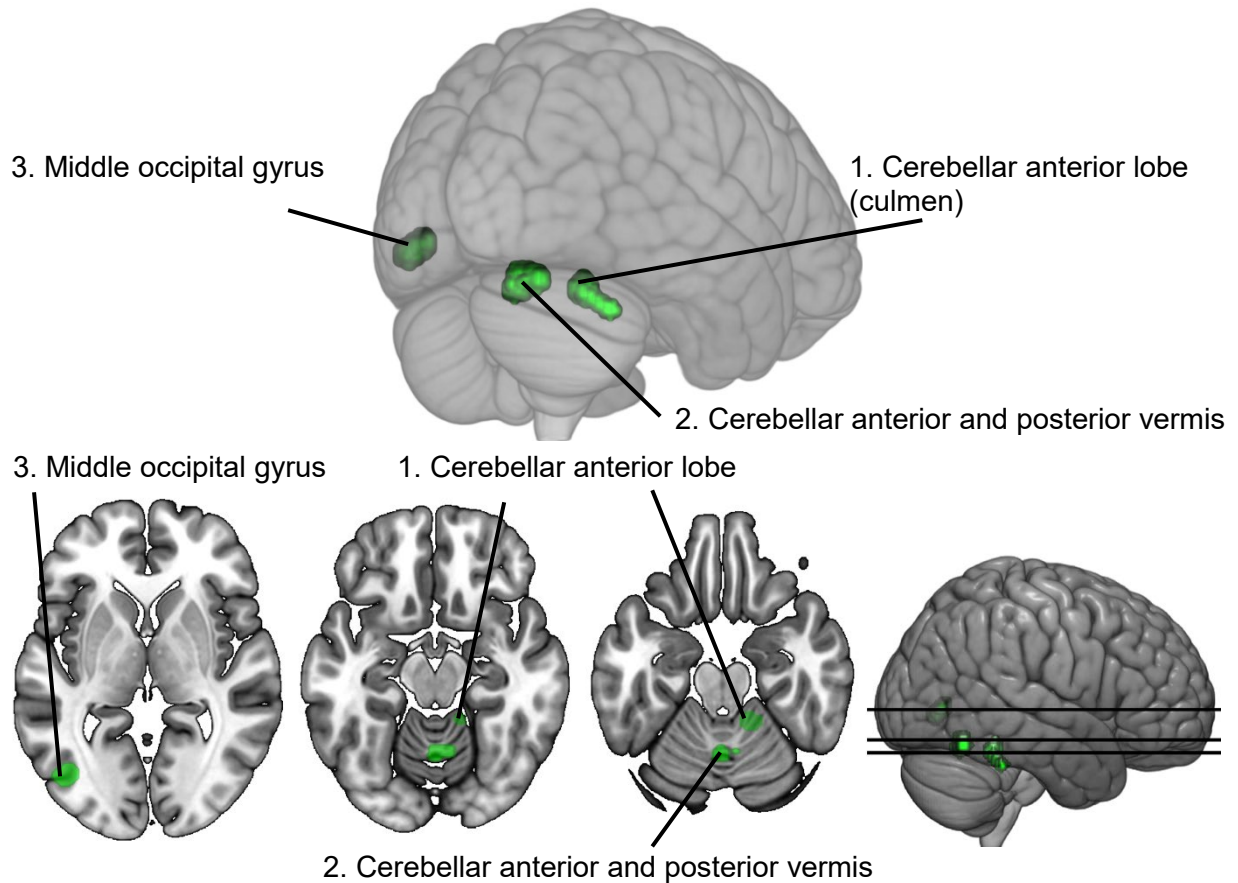
Supplementary Figure 1. Clusters from the supplementary ALE meta-analysis.

Supplementary table 4. Supplementary ALE meta-analysis cluster information

Cluster number	Label	mm³ (center MNI coordinates)	peak MNI coordinates	Contributing experiments
1	R Cerebellar anterior lobes 3-5 Culmen	1176 (16.6 -43.2 -22)	14 -44 -20 24 -40 -28	Ouchi et al., 1999; Jahn et al., 2004; Slobounov et al., 2006b; Ferraye et al., 2014; Taube et al., 2015; Mouthon et al., 2018
2	Cerebellar anterior and posterior lobes 4-6 Culmen and declive Vermis	1104 (2.1 -60.8 -17.7)	0 -62 -20 8 -60 -18	Ouchi et al., 1999; Jahn et al., 2004; Jahn et al., 2008; Mouthon et al., 2018
3	Middle occipital gyrus, inferior and middle temporal gyrus	936 (-43.4 -72.9 0.2)	-44 -74 0	Slobounov et al., 2006a; Slobounov et al., 2006b; Taube et al., 2015; Mouthon et al., 2018

Abbreviations: mm=millimeter; L=left; R=right

Limitations

Generally, eligible studies for inclusion in ALE meta-analyses require a field of view that measures activity across the entire brain. The two PET studies had a limited brain coverage: from the middle frontal gyrus to the lower cerebellum (Ouchi et al., 1999) and from the lower superior frontal gyrus to the upper cerebellum (Ouchi et al., 2001).Therefore, the results of this supplementary ALE meta-analysis should be interpreted with caution.

Supplementary table 1. Characteristics of the experiments included in the main ALE meta-analysis

Study	N subjects	Contrast
Malouin et al. (2003)	6	Bilateral stance > rest
Jahn et al. (2004)	13	MI bilateral stance > motor imagery lying
Slobounov et al. (2006b)[a]	12	MI bilateral stance while viewing virtual room with oscillations of side walls at .3 Hz> MI bilateral stance while viewing stationary virtual room MI bilateral stance while viewing virtual room with anteroposterior oscillations of whole room at .3 Hz > MI bilateral stance while viewing stationary virtual room MI bilateral stance while viewing roll of virtual room at .3 Hz > MI bilateral stance while viewing stationary virtual room
Slobounov et al. (2006a)	12	Watching a video of an anteroposterior swaying virtual person and pressing buttons when instable postures occur while pretending that the virtual person is 'you' (i.e. AO plus MI) > Passively watching the same video while randomly pressing buttons (i.e. AO)
Jahn et al. (2008)	26	See Jahn et al., 2004
Zwergal et al. (2012)	20	See Jahn et al., 2004
Ferraye et al. (2014)	20	MI of anteroposterior weight shifting > Matched visual imagery
Karim et al. (2014)	11	Stance simulation through dorsiflexor/plantarflexor activation in a pattern similar with upright stance control > Dorsiflexor/plantarflexor activation
Taube et al. (2015)[a]	16	AO plus MI of balancing on wobble board whilst withstanding sudden mediolateral perturbations > AO plus MI of bilateral stance AO of balancing on wobble board whilst withstanding sudden mediolateral perturbations > AO of bilateral stance
Mouthon et al. (2018)	16	AO plus MI of balancing on wobble board whilst withstanding sudden mediolateral perturbations > AO plus MI of bilateral stance
Schoberl et al. (2017)	10	Bilateral stance > supine

Abbreviations: MI = motor imagery; AO = action observation
[a]Experiments were pooled per study

Supplementary Table 2. Main ALE meta-analysis cluster information

Cluster number	Label	mm³ (center MNI coordinates)	peak MNI coordinates	Contributing experiments
1	R Cerebellar anterior lobes 3-5 Culmen	792 (14.7 -44.2 -20.5)	14 -44 -20	Jahn et al., 2004; Slobounov et al., 2006b; Ferraye et al., 2014; Mouthon et al., 2018
2	Middle occipital gyrus, inferior and middle temporal gyrus	960 (-43.4 -72.8 0.2)	-44 -74 0	Slobounov et al., 2006a; Slobounov et al., 2006b; Taube et al., 2015; Mouthon et al., 2018

Abbreviations: mm=millimeter; L=left; R=right