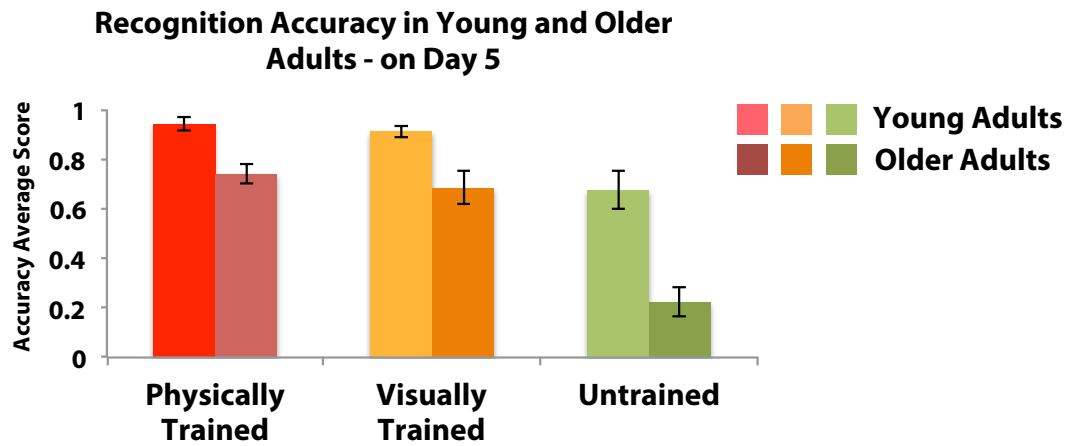


Supplementary Materials

Supplementary Table. Regions that can accurately discriminate better between physically trained and untrained movements on Day 5. (a). Younger Adults. (b). Older Adults.

Region	BA	MNI Coordinates			T-value	Cluster Size	P FWE _{corr.} Value
		x	y	z			
<i>(a) Physically trained vs Untrained in Younger Adults on Day 5</i>							
L Inferior Occipital Gyrus	19	-34	-80	-4	8.11	7323	<0.001
R Middle Occipital Gyrus	19	46	-72	4	7.96		
R Middle Temporal Gyrus	19	48	-62	14	7.47		
L Inferior Parietal Lobule	7	-30	-46	40	6.29	580	<0.001
L Inferior Parietal Lobule	39	-40	-54	54	5.67		
L Superior Parietal Lobule	7	-28	-48	68	5.48		
R Superior Parietal Lobule	1	26	-34	40	5.94	72	0.001
R Superior Parietal Lobule	1	32	-34	34	3.71		
R Superior Parietal Lobule	6	18	-38	40	3.57		
L Paracentral Gyrus	6	-20	-14	56	5.67	408	<0.001
R Supplementary Motor Area	6	6	-12	66	5.64		
L Paracentral Gyrus	6	-10	-20	64	5.21		
R Superior Parietal Lobule	7	20	-56	48	5.48	313	<0.001
R Paracentral Gyrus	1	4	-38	60	4.79		
R Superior Parietal Lobule	7	14	-54	66	4.77		
R Precentral Gyrus	6	26	-16	62	5.48	274	<0.001
R Precentral Gyrus	6	38	-12	60	4.95		
R Precentral Gyrus	6	30	-14	48	4.92		
R Middle Frontal Gyrus	9	30	38	44	5.08	52	0.009
R Middle Frontal Gyrus	9	30	32	50	4.40		
R Superior Frontal Gyrus	8	22	44	44	3.33		
L Inferior Parietal Lobule	40	-52	-34	42	4.61	136	<0.001
L Inferior Parietal Lobule	40	-44	-30	26	4.47		
L SupraMarginal Gyrus	40	-52	-24	34	4.40		
<i>(b) Physically trained vs Untrained in Older Adults on Day 5</i>							
R Cuneus	19	16	-78	32	10.70	11863	<0.001
R Middle Temporal Gyrus	19	52	-64	8	8.41		
R Superior Occipital Gyrus	19	20	-86	28	8.17		
L SupraMarginal Gyrus	40	-54	-26	32	7.65	663	<0.001
L Postcentral Gyrus	40	-48	-22	42	5.75		
L SupraMarginal Gyrus	40	-60	-26	38	4.93		
L Inferior Frontal Gyrus	8	-48	18	32	7.32	141	<0.001
L Inferior Frontal Gyrus	44	-42	24	24	5.86		
L Middle Frontal Gyrus		-34	18	32	4.07		
R SupraMarginal Gyrus	40	52	-38	26	5.56	96	<0.001
R Superior Temporal Gyrus	39	52	-46	20	5.21		
R Superior Temporal Gyrus	22	60	-38	14	4.17		
R Inferior Frontal Gyrus	44	48	16	30	5.08	103	<0.001
R Middle Frontal Gyrus	8	40	10	36	4.79		
R Inferior Frontal Gyrus	9	42	22	22	4.51		
L Precentral Gyrus	6	-52	2	16	4.92	54	0.011
L Rolandic Operculum	44	-44	4	14	3.79		
L Rolandic Operculum	6	-46	-4	14	3.06		

BA, Brodmann's area; R: right, L: left; $P < 0.005$, uncorrected; $k=20$ voxels. Regions in bold font are FWE-cluster corrected at the $p < 0.05$ level. Up to three local maxima are listed when a cluster has multiple peaks more than 8 mm apart.



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12 **Supplementary Figure 1. Recognition Accuracy Average Scores in Young and**
 13 **Older Adults.** After the post-training scan on Day 5, participants watched each dance
 14 movie stimulus again (6 per training condition) and were asked to categorize them as
 15 either being physically trained, visually trained or untrained.