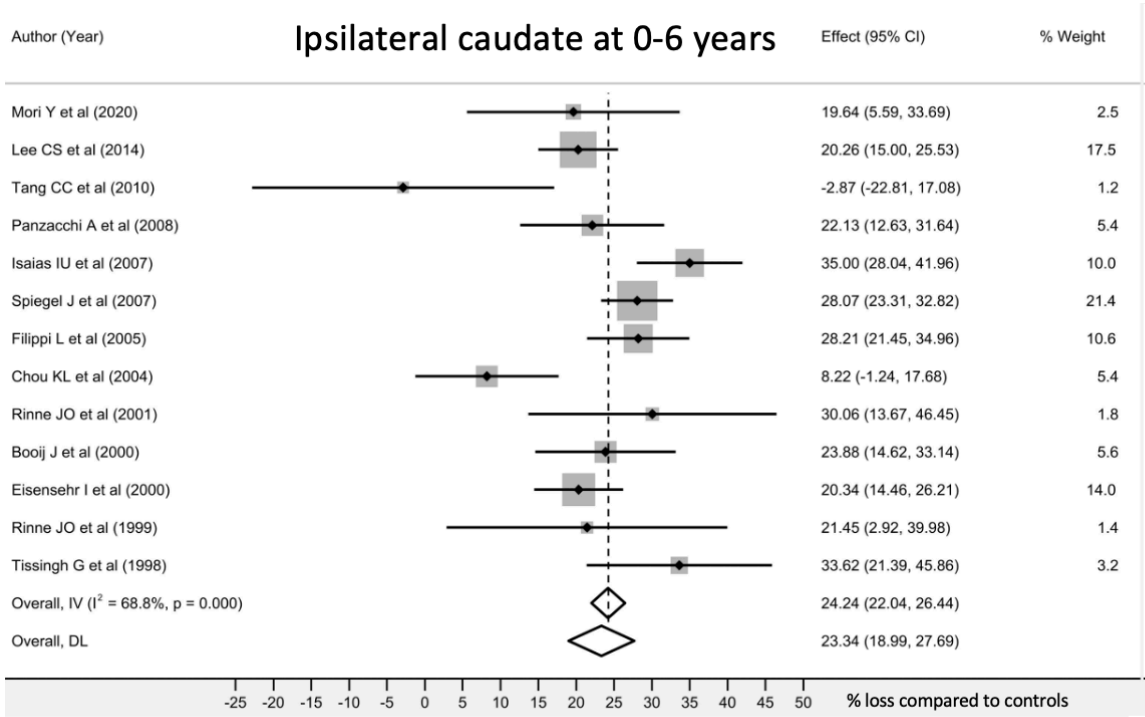
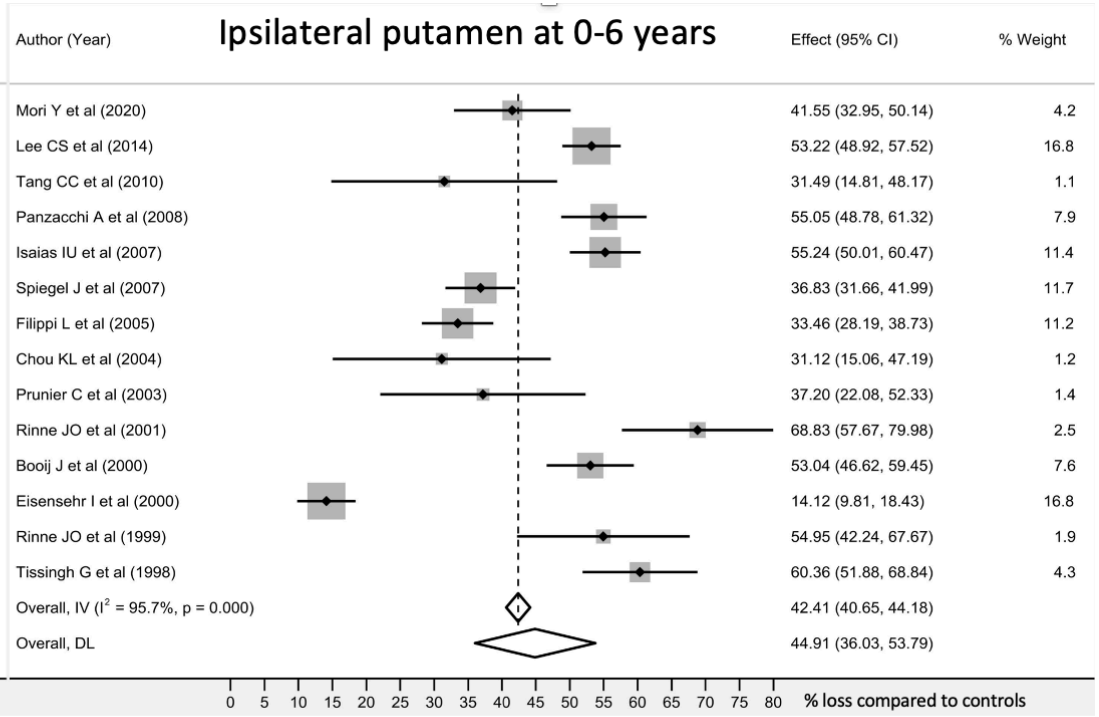
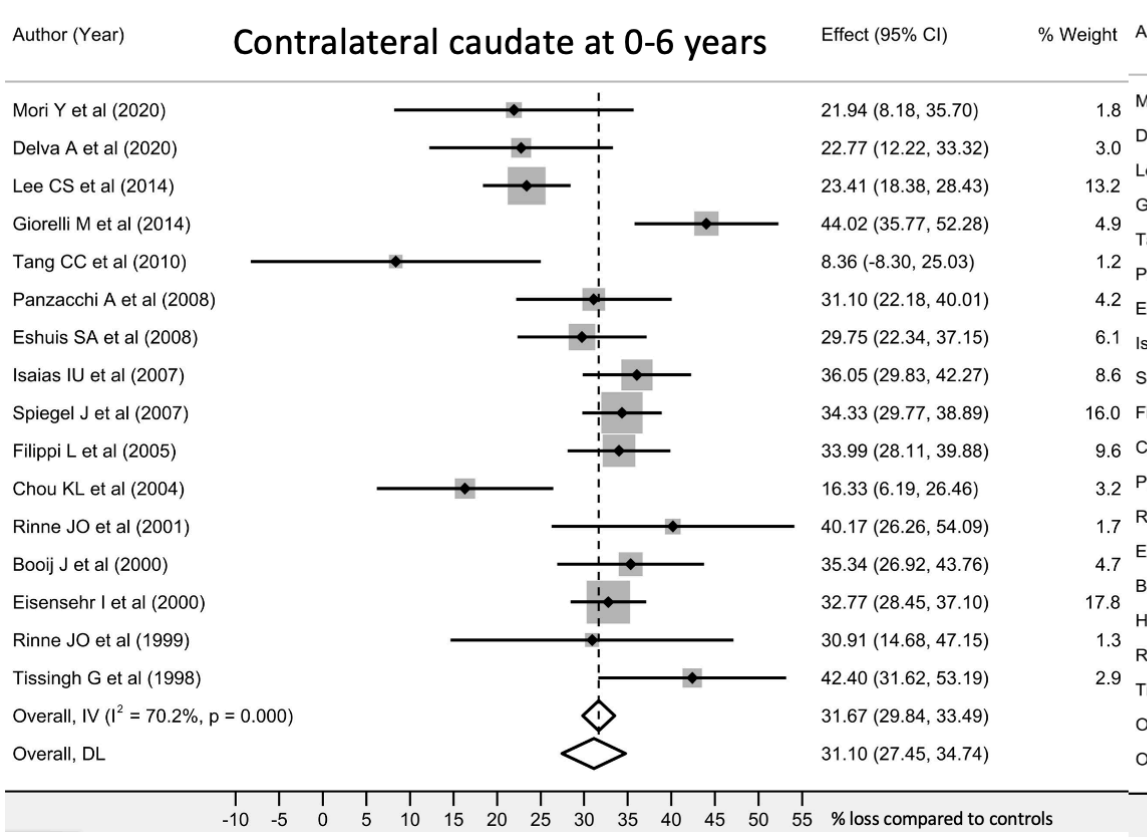
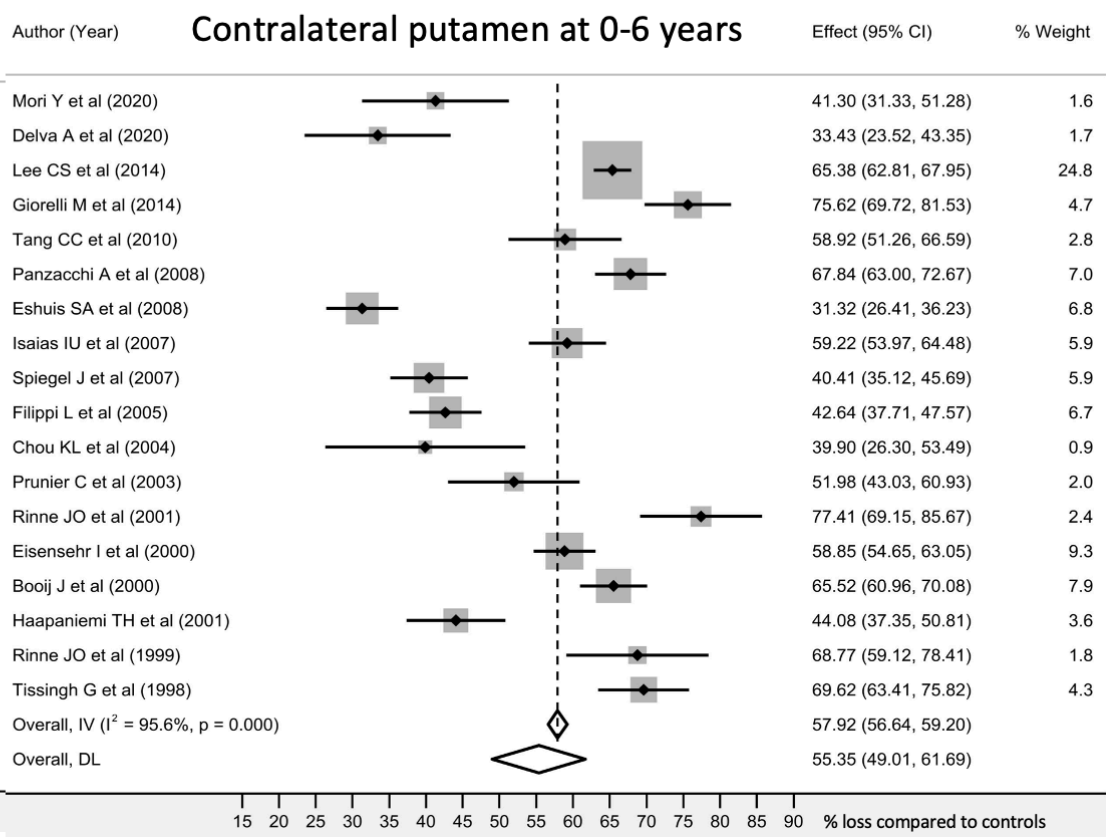

Ipsilateral caudate at 0-6 years
Author (Year)
Effect (95% CI)
% Weight
Mori Y et al (2020) 19.64 (5.59, 33.69) 2.5
Lee CS et al (2014) 20.26 (15.00, 25.53) 17.5
Tang CC et al (2010) -2.87 (-22.81, 17.08) 1.2
Panzacchi A et al (2008) 22.13 (12.63, 31.64) 5.4
Isaias IU et al (2007) 35.00 (28.04, 41.96) 10.0
Spiegel J et al (2007) 28.07 (23.31, 32.82) 21.4
Filippi L et al (2005) 28.21 (21.45, 34.96) 10.6
Chou KL et al (2004) 8.22 (-1.24, 17.68) 5.4
Rinne JO et al (2001) 30.06 (13.67, 46.45) 1.8
Booij J et al (2000) 23.88 (14.62, 33.14) 5.6
Eisensehr I et al (2000) 20.34 (14.46, 26.21) 14.0
Rinne JO et al (1999) 21.45 (2.92, 39.98) 1.4
Tissingh G et al (1998) 33.62 (21.39, 45.86) 3.2
Overall, IV (I² = 68.8%, p = 0.000) 24.24 (22.04, 26.44)
Overall, DL 23.34 (18.99, 27.69)
-25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50
% loss compared to controls


Ipsilateral putamen at 0-6 years
Author (Year)
Effect (95% CI)
% Weight
Mori Y et al (2020) 41.55 (32.95, 50.14) 4.2
Lee CS et al (2014) 53.22 (48.92, 57.52) 16.8
Tang CC et al (2010) 31.49 (14.81, 48.17) 1.1
Panzacchi A et al (2008) 55.05 (48.78, 61.32) 7.9
Isaias IU et al (2007) 55.24 (50.01, 60.47) 11.4
Spiegel J et al (2007) 36.83 (31.66, 41.99) 11.7
Filippi L et al (2005) 33.46 (28.19, 38.73) 11.2
Chou KL et al (2004) 31.12 (15.06, 47.19) 1.2
Prunier C et al (2003) 37.20 (22.08, 52.33) 1.4
Rinne JO et al (2001) 68.83 (57.67, 79.98) 2.5
Booij J et al (2000) 53.04 (46.62, 59.45) 7.6
Eisensehr I et al (2000) 14.12 (9.81, 18.43) 16.8
Rinne JO et al (1999) 54.95 (42.24, 67.67) 1.9
Tissingh G et al (1998) 60.36 (51.88, 68.84) 4.3
Overall, IV (I² = 95.7%, p = 0.000) 42.41 (40.65, 44.18)
Overall, DL 44.91 (36.03, 53.79)
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80
% loss compared to controls


Contralateral caudate at 0-6 years
Author (Year)
Effect (95% CI)
% Weight
Mori Y et al (2020) 21.94 (8.18, 35.70) 1.8
Delva A et al (2020) 22.77 (12.22, 33.32) 3.0
Lee CS et al (2014) 23.41 (18.38, 28.43) 13.2
Giorelli M et al (2014) 44.02 (35.77, 52.28) 4.9
Tang CC et al (2010) 8.36 (-8.30, 25.03) 1.2
Panzacchi A et al (2008) 31.10 (22.18, 40.01) 4.2
Eshuis SA et al (2008) 29.75 (22.34, 37.15) 6.1
Isaias IU et al (2007) 36.05 (29.83, 42.27) 8.6
Spiegel J et al (2007) 34.33 (29.77, 38.89) 16.0
Filippi L et al (2005) 33.99 (28.11, 39.88) 9.6
Chou KL et al (2004) 16.33 (6.19, 26.46) 3.2
Rinne JO et al (2001) 40.17 (26.26, 54.09) 1.7
Booij J et al (2000) 35.34 (26.92, 43.76) 4.7
Eisensehr I et al (2000) 32.77 (28.45, 37.10) 17.8
Rinne JO et al (1999) 30.91 (14.68, 47.15) 1.3
Tissingh G et al (1998) 42.40 (31.62, 53.19) 2.9
Overall, IV (I² = 70.2%, p = 0.000) 31.67 (29.84, 33.49)
Overall, DL 31.10 (27.45, 34.74)
-10 -5 0 5 10 15 20 25 30 35 40 45 50 55
% loss compared to controls


Contralateral putamen at 0-6 years
Author (Year)
Effect (95% CI)
% Weight
Mori Y et al (2020) 41.30 (31.33, 51.28) 1.6
Delva A et al (2020) 33.43 (23.52, 43.35) 1.7
Lee CS et al (2014) 65.38 (62.81, 67.95) 24.8
Giorelli M et al (2014) 75.62 (69.72, 81.53) 4.7
Tang CC et al (2010) 58.92 (51.26, 66.59) 2.8
Panzacchi A et al (2008) 67.84 (63.00, 72.67) 7.0
Eshuis SA et al (2008) 31.32 (26.41, 36.23) 6.8
Isaias IU et al (2007) 59.22 (53.97, 64.48) 5.9
Spiegel J et al (2007) 40.41 (35.12, 45.69) 5.9
Filippi L et al (2005) 42.64 (37.71, 47.57) 6.7
Chou KL et al (2004) 39.90 (26.30, 53.49) 0.9
Prunier C et al (2003) 51.98 (43.03, 60.93) 2.0
Rinne JO et al (2001) 77.41 (69.15, 85.67) 2.4
Eisensehr I et al (2000) 58.85 (54.65, 63.05) 9.3
Booij J et al (2000) 65.52 (60.96, 70.08) 7.9
Haapaniemi TH et al (2001) 44.08 (37.35, 50.81) 3.6
Rinne JO et al (1999) 68.77 (59.12, 78.41) 1.8
Tissingh G et al (1998) 69.62 (63.41, 75.82) 4.3
Overall, IV (I² = 95.6%, p = 0.000) 57.92 (56.64, 59.20)
Overall, DL 55.35 (49.01, 61.69)
15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
% loss compared to controls