

November 5 – 3:45-5:15PM

T-OR-2126-LB**White Matter Volume and Integrity in Normal Weight, Overweight, and Successful Weight Losing Adolescent***Kara Duraccio Provo UT, Kaylie Carbine Provo UT, Kimberly Monroe Provo Utah, Kimberly Barnett Provo UT - Utah, Chad Jensen*

Background: Increased body mass may be associated with decreased white matter volumes, particularly in the cingulum, genu, splenium, fornix, corona radiate, longitudinal fasciculus, and insular cortex. Exploring how white matter volume and integrity are associated with weight and weight loss may provide additional insight into the neural consequences associated with obesity and what neural sequelae may be mitigated by weight loss. The primary aim of our study was to examine white matter volume and integrity in successful weight losers (SWLs) compared to normal weight (NW) and overweight (OW) adolescents. **Methods:** Eleven SWLs, twelve NW, and eleven OW adolescent participants underwent diffusion tensor imaging (DTI). Multiple three-group one-way ANOVAs were conducted comparing white matter volume and integrity across seven regions of interest (ROI) identified in previous research. Pearson correlations were also computed to examine the association between BMI and white matter volumes in identified ROIs. **Results:** BMI was only significantly correlated with activation in the left cingulum ($r = .37, p = .03$). The main effect of weight status group was only significant for the left anterior corona radiate ($p = .01$). Post hoc Tukey HSD analyses indicated that the average white matter volume in the left anterior corona radiate was significantly lower in the NW group as compared to the OW group and SWL group ($ps < .03$).

Conclusions: BMI was only related to neural activation in one region of interest within the brain, and weight classification generally did not affect white matter structures. Adult literature on white matter volumes has shown a significant age by BMI interaction; white matter deficits that appear to accompany adulthood obesity may not develop until later in life. We suggest conducting further research with subjects in emerging and early adulthood to further explore the effect of length of obesity status on white matter structures within the brain.

T-OR-2129-LB**Greater likelihood of clinically significant weight loss following extended referral to an open-group behavioural weight loss programme: 12 month outcomes from the WRAP trial.***Amy Ahern Cambridge Cambridgeshire, Graham Wheeler Cambridge Cambridgeshire, Paul Aveyard Oxford Oxfordshire, Emma Boyland Liverpool Merseyside, Jason Halford Liverpool Merseyside, Adrian Mander Cambridge Cambridgeshire, Jennifer Woolston Cambridge Cambridgeshire, Ann Thomson London London, Melina Tsiountsioura Cambridge Cambridgeshire, Susan Jebb Woodstock Road Oxford*

Background: The aim was to assess whether general practitioner referral to an open-group behavioural weight loss programme was more effective than a brief self-help intervention, and whether referral for a 52 week programme was more effective than a commonly commissioned 12 week

programme. **Methods:** The Weight loss Referrals for Adults in Primary Care (WRAP) trial recruited 1269 participants ($BMI \geq 28 \text{ kg/m}^2$, $\text{age} \geq 18$ years, 68% female) through their primary care provider and randomised them in a 2:5:5 allocation to: a single session Brief intervention (BI), referral to a commercial open-group behavioural weight loss programme (Weight Watchers®) for 12 weeks (CP12), or the same programme for 52 weeks (CP52), with follow-up assessments at 3 months and 12 months from baseline. The percentage of participants in each intervention losing $\geq 5\%$ and $\geq 10\%$ weight at the 12 month assessment was calculated using last observation carried forward. Risk ratios (RR) were calculated to compare the commercial programmes with BI, and CP12 with CP52. **Results:** 823 (65%) participants completed the 12 month assessment. In the intention to treat analysis, 48% of CP52 participants lost $\geq 5\%$ weight compared with 34% of CP12 participants and 18% of BI participants. 27% of CP52 participants lost $\geq 10\%$ weight compared with 15% of CP12 and 8% of BI participants. Compared with BI, participants referred to either commercial programme were significantly more likely to lose $\geq 5\%$ [$RR = 2.35$ (95%CI 1.68, 3.29) $p < 0.0001$] and $\geq 10\%$ baseline weight [$RR = 2.60$ (95%CI 1.59, 4.25) $p < 0.0001$]. CP52 participants were significantly more likely than CP12 participants to lose $\geq 5\%$ [$RR = 1.40$ (95%CI 1.15, 1.69) $p < 0.0006$] and $\geq 10\%$ weight [$RR = 1.80$ (95%CI 1.37, 2.37) $p < 0.0001$]. **Conclusions:** Increasing the length of referral to an open-group behavioural weight loss programme significantly increased the likelihood that participants would achieve clinically significant weight loss at 1 year.

T-OR-2130-LB**Weight loss induced by calorie restriction in older adults with obesity leads to favorable changes compared to exercise only or changes in diet composition: the CROSSROADS randomized controlled study***Jamy Ard Winston Salem North Carolina, Courtney Williams Birmingham AL, Brooks Wingo Birmingham Alabama, Amy Goss Birmingham Alabama, Marilyn Haas Birmingham AL, Barbara Gower Birmingham Alabama, David Roth Baltimore Maryland, Julie Locher Birmingham AL*

Background: Despite an increasing prevalence of obesity in older adults and associated risk, the evidence regarding risk vs. benefit for calorie restriction to induce weight loss is mixed. We wanted to determine if the overall benefit outweighed risk with calorie restriction compared to exercise only or changes in diet composition. **Methods:** We randomized 164 older adults with a $BMI \geq 30 \text{ kg/m}^2$ and at least 1 medication for diabetes, hypertension, or hyperlipidemia to 1 of 3 arms: Exercise Only control (EO, 90-150 min of aerobic exercise + 2 sessions of resistance training/week), Weight Maintenance (WM, low energy dense diet pattern + exercise), and Weight Loss (WL, calorie restricted low energy dense diet pattern + exercise). Follow up was completed at 12 months with 90% providing a final weight. Body composition, physical function, and metabolic risk factors were assessed using an intention to treat analysis (multiple imputation). Outcome data presented are ANCOVA least square means adjusted for age, race, sex and baseline values and are shown as mean \pm SD. **Results:** At baseline, mean age was 70.3 ± 4.7 years and mean BMI was $33.7 \pm 3 \text{ kg/m}^2$. Weight changes at 12 months were -3.3 ± 1.5 , -2.4 ± 1.5 , and $-8.6 \pm 1.4 \text{ lb}$ for EO, WM, and WL, respectively ($p < 0.01$ EO/WM vs WL). Body composition changes by DEXA favored WL with greater fat mass loss and no

significant difference in lean mass vs EO/WL. WL and WM had significant within group decreases in total abdominal fat volume by MRI. Changes in glucose, HDL, and adiponectin were significantly greater for WL vs EO. There were small increases in short physical performance battery scores for WM and WL; these were not significantly different from EO.

Conclusions: A 12-month WL behavioral intervention in this population of high risk older adults with obesity led to greater weight loss with limited loss of lean mass, greater improvements in key risk factors, and stable physical function. In the short-term, modest weight loss has important benefits with low risk compared to EO or WM.