

### Body Composition Measures Associated With Postprandial Triglyceride Concentrations

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**Objectives:** A large increase in triglyceride (TG) concentrations following a high-fat meal (i.e., postprandial lipemia) is an independent cardiovascular disease risk factor. However, little is known regarding individual factors that are associated with or determine postprandial triglycerides. We aimed to identify body composition measures that are associated with postprandial triglyceride concentrations following a high-fat meal.

**Methods:** We conducted a secondary analysis of data from 5 previously conducted studies in our laboratory, each utilizing identical methods. Postprandial TG were measured at baseline and 4 hours after a high-fat shake (73% fat; 9 kcal/kg). In addition to body mass index (BMI) and waist circumference (WC), body composition variables – relative body fat (BF%), relative muscle mass (MM%), and visceral adipose tissue (VAT) – were measured via bioelectrical impedance.

**Results:** Across 5 studies, complete data from 156 participants (age:  $44.9 \pm 21.0$  years; sex: 83F/73M; BMI:  $27.3 \pm 5.5$  kg/m<sup>2</sup>; fasting

glucose:  $98.6 \pm 7.8$  mg/dL; fasting TG:  $94.6 \pm 45.3$  mg/dL; fasting total cholesterol:  $170.8 \pm 34.5$  mg/dL) were compiled for this secondary analysis. Postprandial TG were correlated with age ( $r = 0.24$ ,  $p = 0.003$ ) but no difference between sexes was observed ( $p = 0.06$ ). Significantly associated with 4-hr TG were BMI ( $r = 0.29$ ,  $p < 0.0001$ ), WC ( $r = 0.33$ ,  $p < 0.0001$ ), BF% ( $r = 0.23$ ,  $p = 0.004$ ), MM% ( $r = 0.23$ ,  $p = 0.004$ ), and VAT ( $r = 0.35$ ,  $p < 0.0001$ ). In a backward elimination regression ( $R^2 = 0.15$ ), the variables most predictive of 4-hr TG were MM% ( $\beta = 0.21$ ,  $p = 0.009$ ), VAT ( $\beta = 0.25$ ,  $p = 0.004$ ), and BF% ( $\beta = 0.16$ ,  $p = 0.064$ ).

**Conclusions:** In a secondary analysis of 156 participants across 5 studies, we identified MM%, VAT, and BF% as being the most predictive of 4-hr TG. Although the strength of the relationship may be weak to moderate, body composition appears to influence postprandial triglycerides. Further research could determine preventative measures regarding body composition to lower the risk of cardiovascular disease associated with postprandial triglycerides.

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