Concurrent Session 6: Glycaemic Control

**Insulin secretion and body composition are influenced by the feeding pattern**

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**Background** – Insulin secretion is more closely aligned to the time of feeding in pigs fed twice daily rather than when fed *ad libitum*. Insulin plays an important role in promoting growth processes and twice daily feeding may lead to a more efficient utilisation of energy substrate for metabolism and growth.

**Objective** – To determine 24h profiles of plasma insulin and glucose in pigs fed either twice daily or *ad libitum* and to assess if feeding regimens affect body composition.

**Design** – Twenty entire male pigs were allocated randomly to individual pens in two air spaces with two rooms per air space. The pigs were maintained at 23 ± 1°C and fed either *ad libitum* or entrained to two 60 minute feeding periods (0900-1000 h and 1600-1700 h) per day for 49 days. Hourly blood samples were collected for 24 h for plasma insulin and glucose determination. Carcass body composition was assessed by computed tomography (CT).

**Outcomes** – There were no significant differences in plasma glucose between the two treatments. Circulating insulin concentrations were maintained at a constant level throughout the sampling period for the *ad libitum* fed pigs. The phasic fed pigs showed significant increases (P=0.05) in insulin concentrations occurring approximately 1 h after both feeding periods. There was a significant decrease in total fat percentage and a significant increase in total muscle percentage (P=0.03, for each) for the phasic fed pigs when compared to those fed *ad libitum*.

**Conclusions** – The data show that feeding pigs at two succinct periods aligns insulin secretion to the time of feeding and this may, in turn, influence the way energy is partitioned.

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**Effect of a low-resource-intensive lifestyle modification program on type 2 diabetes risk in Australian adults**

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**Background** – Large randomised controlled trials suggest that lifestyle modification can reduce risk factors for diabetes. However few low-resource-intensive lifestyle modification programs have been evaluated in Australia.

**Objective** – To assess the effectiveness of a low-resource-intensive lifestyle modification program incorporating resistance training (RT), and to compare a gymnasium-based to a home-based RT program, on diabetes diagnostic status and risk.

**Design** – A quasi-experimental two-group study was undertaken with 122 participants with diabetes risk factors - 36.9% had impaired glucose tolerance (IGT) or impaired fasting glucose (IFG) at Baseline. The intervention included: a 6-week group self-management education program; a gymnasium-based or home-based 12-week resistance training program; and a 34-week maintenance program. Fasting and 2-hour plasma glucose (FPG, 2hrPG), blood lipids, blood pressure, body composition, physical activity and diet were assessed at Baseline and Week 52.

**Outcomes** – Mean 2hrPG and FPG fell by 0.34 mmol/l (95% CI: -0.60, -0.08) and 0.15 mmol/l (95% CI: -0.23, -0.07) respectively. The proportion of participants with IFG or IGT decreased from 36.9% to 23.0% (p=0.006). Mean weight loss was 4.07 kg (95% CI: -4.99, -3.15). The only significant difference between resistance training groups was a greater reduction in systolic blood pressure for the gymnasium-based group (p=0.008).

**Conclusions** – This intervention significantly improved diabetes diagnostic status and reduced diabetes risk to a comparable degree to other low-resource-intensive lifestyle modification programs and more intensive interventions applied to people with IGT. Home-based and gymnasium-based RT did not differ significantly in their effects.