	NFG / NGT	**IFG / NGT**	**NFG / IGT**	**IFG / IGT**	**IFG / DM**
n	36	18	36	57	18
Active GLP-1_{10} (pmol/l/10min)	62.0 ± 13.3	37.7 ± 10.2	55.5 ± 14.6	40.0 ± 7.8	24.5 ± 5.8
P	0.12				
Active GLP-1_{20} (pmol/l/20min)	227.3 ± 43.3	148.1 ± 28.8	209.1 ± 38.0	149.8 ± 23.8	108.9 ± 19.0
P	0.19				
Active GLP-1_{30} (pmol/l/30min)	399.2 ± 66.6	283.7 ± 46.0	380.2 ± 55.9	284.0 ± 37.7	238.0 ± 37.9
P	0.42				

Table 1: Area Above Basal for Active GLP-1 (Mean ± SEM) for each group characterized by fasting and glucose tolerance status for the first 10, 20 and 30 minutes of the study. *p*-values obtained by Kruskal-Wallis test (unadjusted for 3 tests).

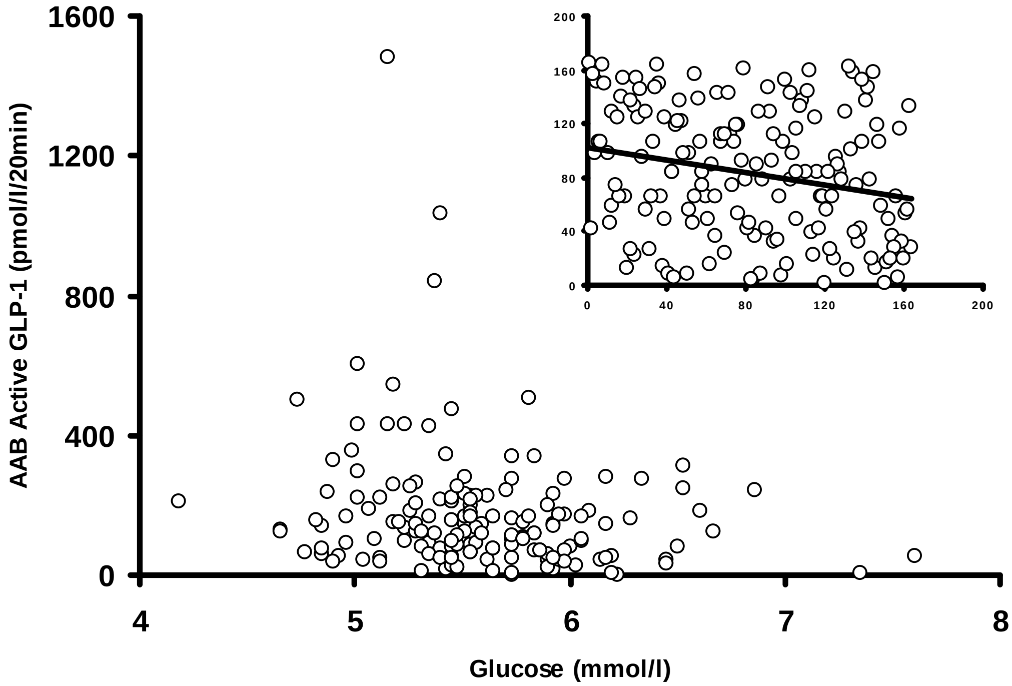

Figure 1: AAB Active GLP-1 concentrations over the first 20 minutes of the study were negatively associated with fasting plasma glucose concentrations, ($\mathbf{r_s}$ = -0.24, *p*=0.002). The inset panels represent the rank transformed values of integrated GLP-1 concentrations plotted against rank transformed fasting glucose values.

	Active_GLP_AAB_10	Active_GLP_AAB_20	Active_GLP_AAB_30
Glucose at 0 minutes	$\mathbf{r_s}$ = -0.18 *p*=0.02	$\mathbf{r_s}$ = -0.24 *p*=0.002	$\mathbf{r_s}$ = -0.23 *p*=0.004
Glucose at 10 minutes	$\mathbf{r_s}$ = 0.32 *p*<0.0001	$\mathbf{r_s}$ = 0.25 *p*=0.0011	$\mathbf{r_s}$ = 0.20 *p*=0.0092
Glucose at 20 minutes		$\mathbf{r_s}$ = 0.28 *p*=0.0004	$\mathbf{r_s}$ = 0.25 *p*=0.001
Glucose at 30 minutes			$\mathbf{r_s}$ = 0.088 *p*=0.26

Table 2: Spearman correlation coefficients for AAB active GLP-1 and glucose at 0, 10, 20 and 30 minutes. This is suggestive of a weak association of the early rise in active GLP-1 with fasting and early post-challenge glucose concentrations. Since glucose concentrations at 0, 10, 20 and 30 minutes are interdependent, caution should be exercised in interpreting these *post hoc* associations.

The values of glucose at 10 and 20 minutes were **positively** associated with AAB Active GLP-1 (0-20min), $\mathbf{r_s}$ =0.21 (p=0.006), and $\mathbf{r_s}$ = 0.29(p<0.001), respectively. After adjusting for other covariates in the multiple regression model for AAB Active GLP-1(0-20min), fasting glucose remained significant (negative coefficient [p<0.001], partial r-square=.16, while glucose at 10 min remained positively associated [p<0.005], partial r-square=.06 and glucose at 20 was not significant.

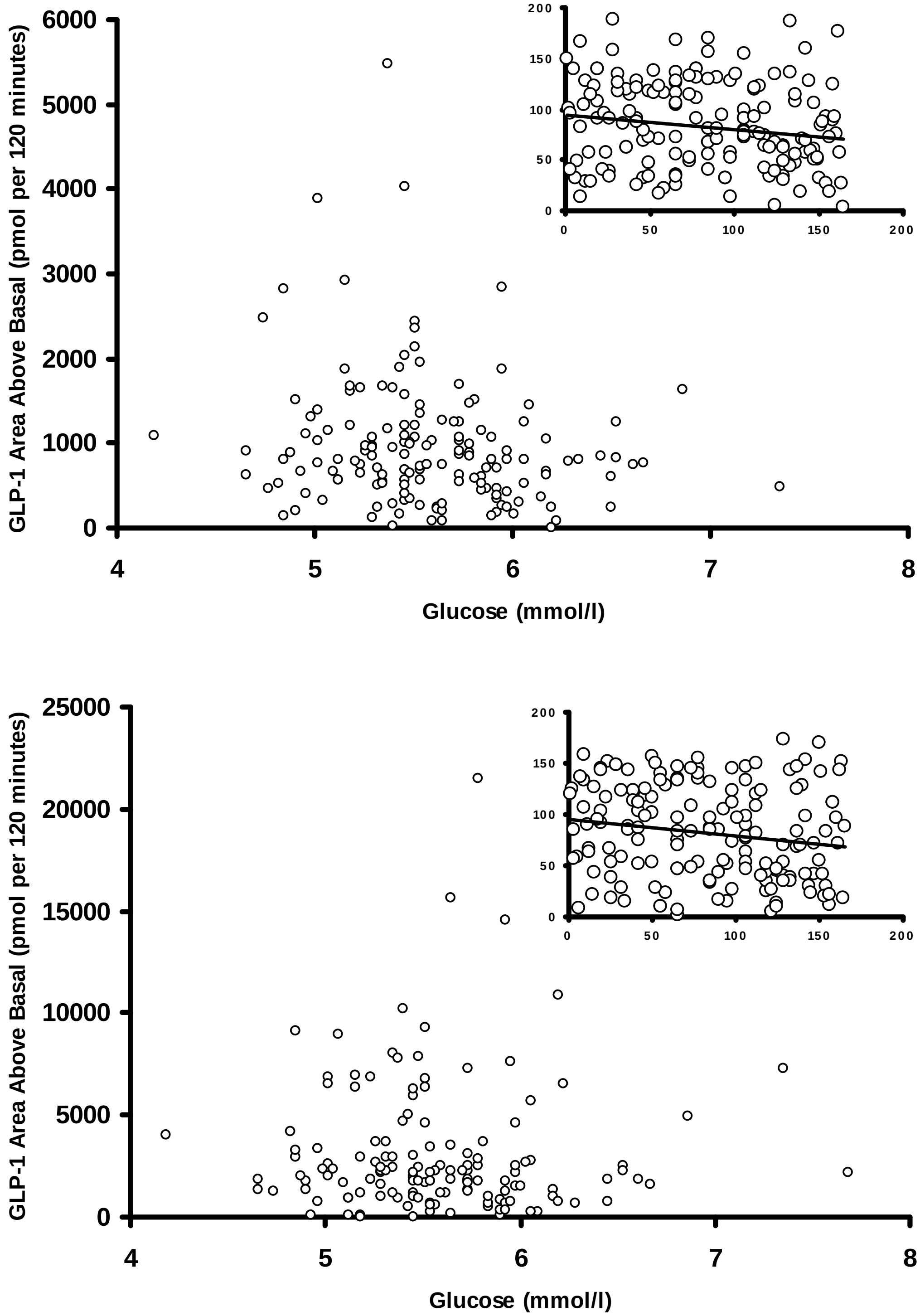

Figure 2: Active (top panel) and total (bottom panel) GLP-1 concentrations were negatively associated with fasting plasma glucose concentrations, ($\mathbf{r_s}$ = -0.26, p<0.01, and $\mathbf{r_s}$ = -0.20, p<0.05, respectively). The inset panels represent the rank transformed values of integrated GLP-1 concentrations plotted against rank transformed fasting glucose values.

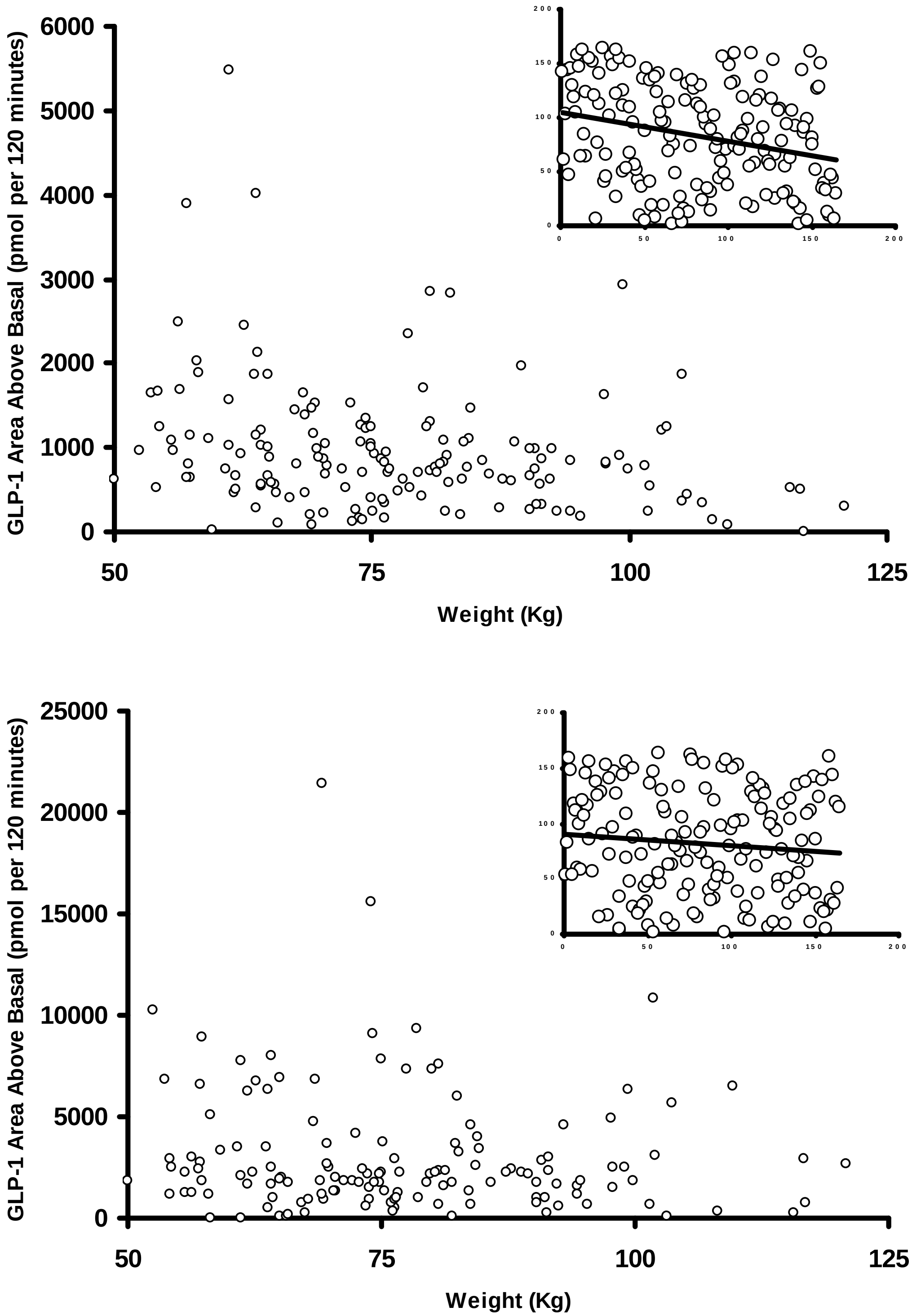

Figure 3: Active (top panel) GLP-1 concentrations were negatively associated with weight ($\mathbf{r_s}$ = -0.28, *p*<0.01). In contrast, total (bottom panel) GLP-1 concentrations were not associated with weight, ($\mathbf{r_s}$ = -0.08, *p*=0.26). The inset panels represent the rank transformed values of integrated GLP-1 concentrations plotted against rank transformed weight.

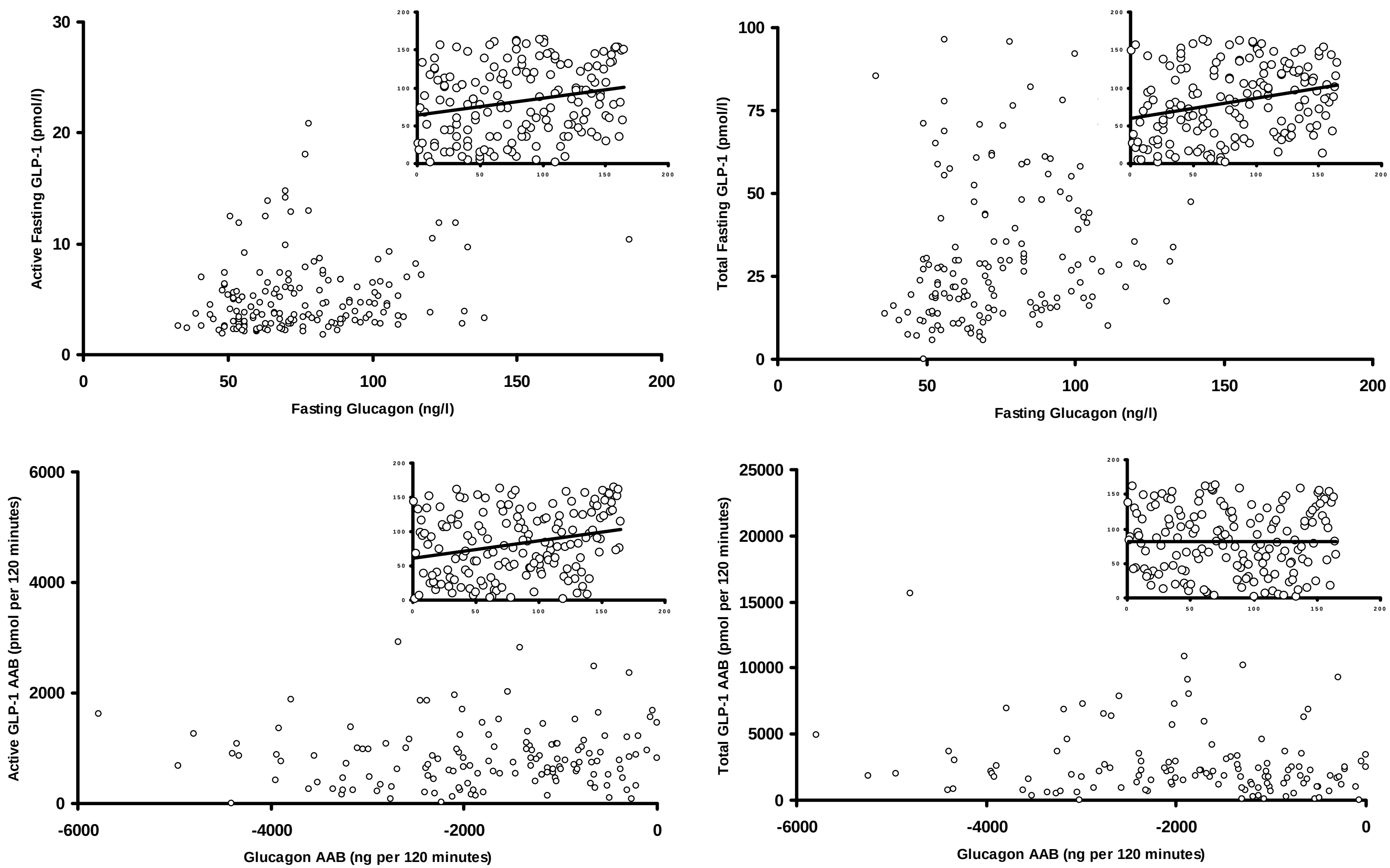

Figure 4: Basal Glucagon levels were univariately associated with basal Active and Total GLP-1 levels (**r_s** = 0.23, *p*<0.01, and **r_s**= 0.28, *p*<0.001, left and right top panel respectively). Integrated active GLP-1 were univariately associated with AUC Glucagon levels (**r_s**=0.26, *p*<0.001). In contrast, no univariate association between Total AAB GLP-1 and AUC Glucagon was observed (**r_s**= 0.00, *p*>0.9). The inset panels represent the rank transformed values of integrated GLP-1 concentrations plotted against rank transformed glucagon.

Area Under the Curve (AUC) vs. Area Above Basal (AAB)

Area Under the Curve (AUC) is calculated using the trapezoidal rule so that in this experiment with values for time 0, 10, 20, 30, 60, 90 and 120, for example AUC_glucose = ((Average $Glucose_{0}$ and $Glucose_{10}$) x (10-0)) + ((Average $Glucose_{10}$ and $Glucose_{20}$) x (20-10)) + ((Average $Glucose_{20}$ and $Glucose_{30}$) x (30-20)) + ((Average $Glucose_{30}$ and $Glucose_{60}$) x (60-30)) + ((Average $Glucose_{60}$ and $Glucose_{90}$) x (90-60)) + ((Average $Glucose_{90}$ and $Glucose_{120}$) x (120-90)).

The Area Above Basal (AAB) is calculated by subtracting integrated basal values from the AUC value so that in the case of glucose AAB_glucose = AUC_glucose – ($Glucose_{0}$ x 120). AAB better represents change in response to a challenge at time zero when there are differences in basal concentrations between groups.