

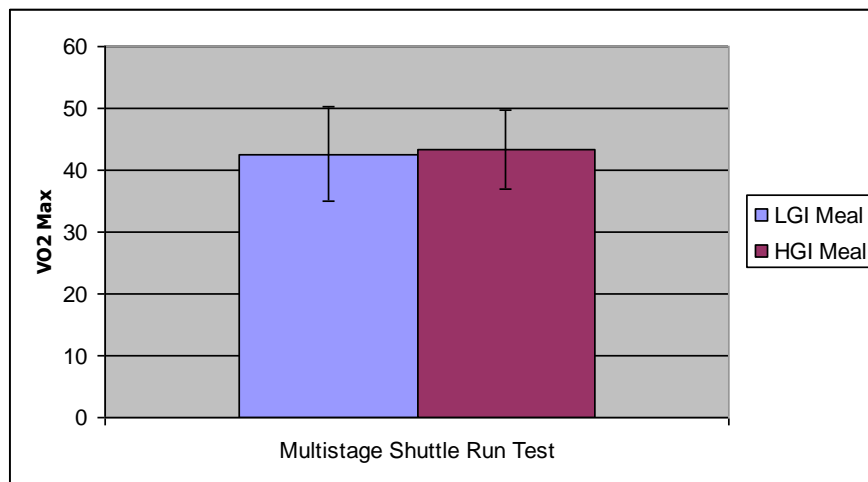
## Chapter 3 - Results

### 3.1 Multistage Shuttle Run Test

**Table 4.** Results, Multistage Fitness Test. Values are means  $\pm$  SD;  $n = 6$  subjects.

	<b>LGI Meal</b> ( $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ )	<b>HGI Meal</b> ( $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ )	<b><i>P</i> value</b>
$\dot{V}\text{O}_2 \text{ max}$	$42.59 \pm 7.62$	$43.30 \pm 6.44$	$P = 0.404$

All subjects ( $n = 6$ ) completed both LGI and HGI trials. No differences were found in  $\dot{V}\text{O}_2 \text{ max}$  for multistage fitness test to exhaustion between meals. The mean  $\dot{V}\text{O}_2 \text{ max}$  for LGI and HGI meals for the multistage fitness test was  $42.59 \pm 7.62 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  and  $43.30 \pm 6.44 \text{ ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$  respectively ( $P = 0.404$ ) (Table 4, Figure 4).



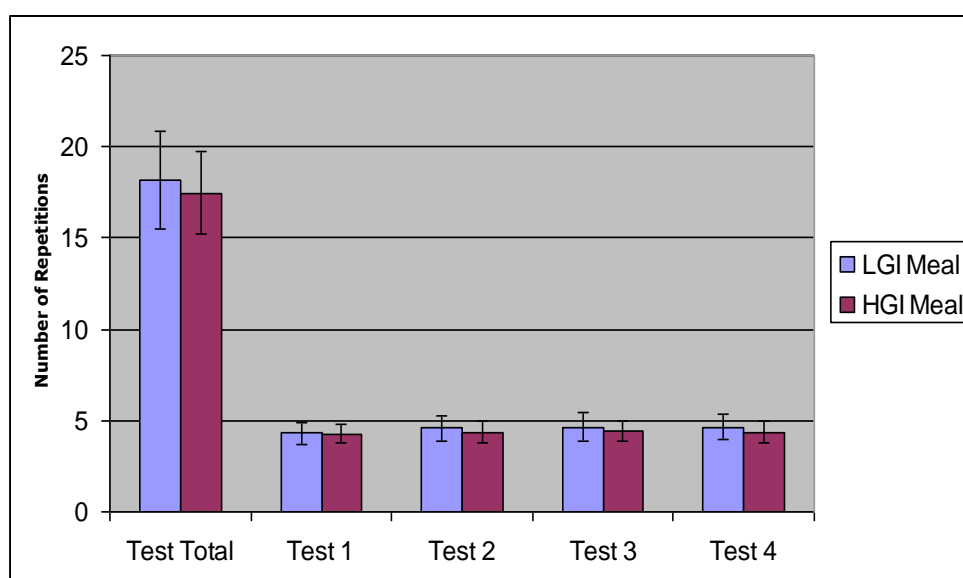
**Figure 4.** Multistage Fitness Test. Values are means  $\pm$  SD;  $n = 6$  subjects.

### 3.2 Simulated Badminton Performance Test

**Table 5.** Results, Simulated Badminton Performance Test. Values are means  $\pm$  SD;  $n = 6$  subjects.

	<b>LGI Meal (Repetitions)</b>	<b>HGI Meal (Repetitions)</b>	<b><i>P</i> value</b>
<b>Test Total</b>	18.19 $\pm$ 2.67	17.47 $\pm$ 2.24	<i>P</i> = 0.431
<b>Test 1</b>	4.33 $\pm$ 0.60	4.25 $\pm$ 0.51	<i>P</i> = 0.747
<b>Test 2</b>	4.58 $\pm$ 0.70	4.38 $\pm$ 0.62	<i>P</i> = 0.435
<b>Test 3</b>	4.64 $\pm$ 0.76	4.44 $\pm$ 0.56	<i>P</i> = 0.340
<b>Test 4</b>	4.64 $\pm$ 0.71	4.38 $\pm$ 0.61	<i>P</i> = 0.371

No significant differences were observed in the number of repetitions performed during simulated badminton performance test for LGI and HGI meal. The overall mean number of repetitions for LGI and HGI meals for the four simulated badminton performance tests was 18.19  $\pm$  2.67 reps and 17.47  $\pm$  2.24 reps respectively ( $P = 0.431$ ) (Table 5). However, subjects tended to perform more repetitions for each test during the LGI trial (4.33  $\pm$  0.60 reps; 4.58  $\pm$  0.70 reps; 4.64  $\pm$  0.76 reps; 4.64  $\pm$  0.71 reps) compared to HGI trial (4.25  $\pm$  0.51 reps; 4.38  $\pm$  0.62 reps; 4.44  $\pm$  0.56 reps; 4.38  $\pm$  0.61 reps) but these differences were not significant ( $P > 0.05$ ) (Table 5, Figure 5).



**Figure 5.** Simulated Badminton Performance Test. Values are means  $\pm$  SD;  $n = 6$  subjects.

### 3.4 Badminton skills test

**Table 6.** Results, Badminton Skills Test – Total Points. Values are means  $\pm$  SD;  $n = 6$  subjects.

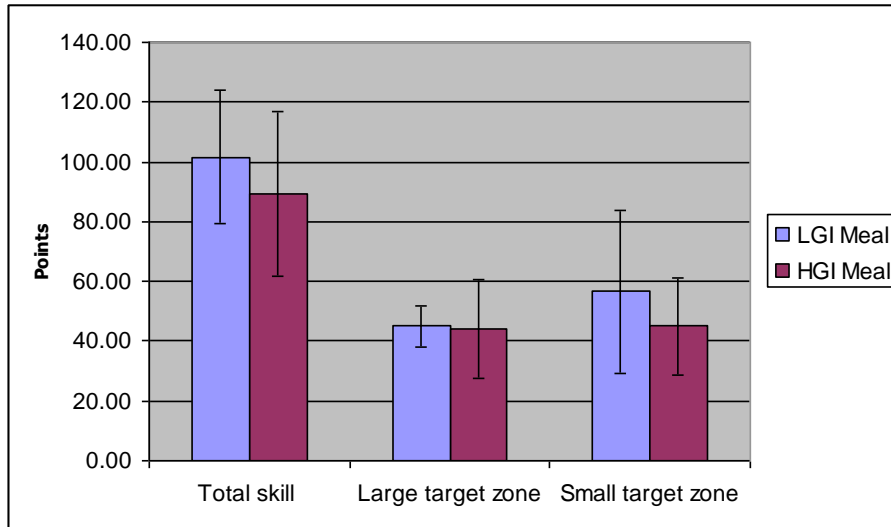
	<b>LGI Meal (Points)</b>	<b>HGI Meal (Points)</b>	<b>P value</b>
<b>Total skill</b>	101.67 $\pm$ 22.29	89.17 $\pm$ 27.46	$P = 0.078$
<b>Long Serve total</b>	28.33 $\pm$ 6.83	23.33 $\pm$ 11.25	$P = 0.462$
<b>Clear total</b>	29.17 $\pm$ 12.01	30.83 $\pm$ 19.85	$P = 0.916$
<b>Drop total</b>	44.17 $\pm$ 16.86	35.00 $\pm$ 17.89	$P = 0.141$

**Table 7.** Results, Badminton Skills Test – Shots on Target. Values are means  $\pm$  SD;  $n = 6$  subjects.

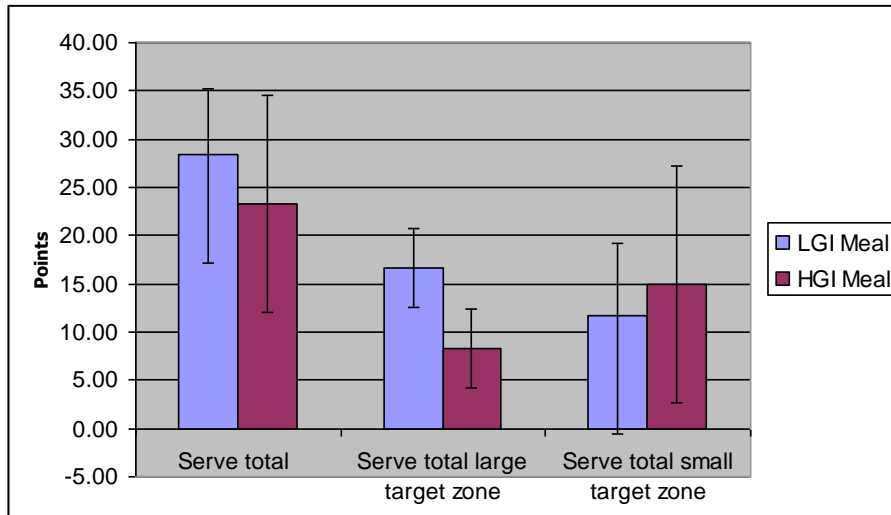
	<b>LGI Meal (Shots)</b>	<b>HGI Meal (Shots)</b>	<b>P value</b>
<b>Total shots on target</b>	14.67 $\pm$ 1.86	13.33 $\pm$ 4.23	$P = 0.279$
<b>Serve total shots on target</b>	4.5 $\pm$ 0.84	3.17 $\pm$ 1.17	$P = 0.129$
<b>Clear total shots on target</b>	4.17 $\pm$ 1.33	4.67 $\pm$ 2.66	$P = 0.595$
<b>Drop total shots on target</b>	6.0 $\pm$ 1.26	5.5 $\pm$ 2.07	$P = 0.408$

The mean total score combining all tests (long serve, clear and drop) was 101.67  $\pm$  22.29 pts and 89.17  $\pm$  27.46 pts for LGI and HGI meals respectively, these differences were not significant ( $P = 0.078$ ) (Table 6, Figure 6). Although these differences were not significant subjects in the LGI trial tended to score more points and have more shots on target (14.67  $\pm$  1.86 shots on target) than those during the HGI trial (13.33  $\pm$  4.23 shots on target) (Table 7, Figure 10). The mean total score combining all tests for points as a result of landing in the small target zone was higher for the LGI trial (56.67  $\pm$  27.33 pts) compared to HGI trial (45  $\pm$  16.43 pts) ( $P = 0.246$ ) (Figure 6). The number of points scored during the long serve (28.33  $\pm$  6.83 pts; 23.33  $\pm$  11.25 pts,  $P = 0.462$ ) (Figure 7) and drop (44.17  $\pm$  16.86 pts; 35.00  $\pm$  17.89 pts,  $P = 0.141$ ) (Figure 9) tended to be greater for LGI trial compared with HGI trial respectively but were not significant (Table 6). This is in contrast to the points scored during the clear test (29.17  $\pm$  12.01 pts; 30.83  $\pm$  19.85 pts,  $P = 0.916$ ) (Figure 8) for LGI and HGI trials where the HGI tended to score more, although these differences are not significant and

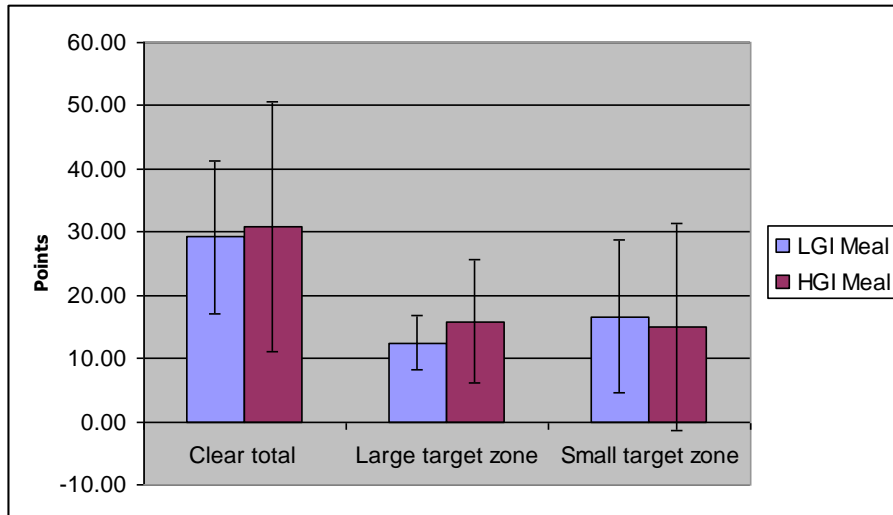
are more closely matched than those for the long serve test (Figure 7) and drop test (Figure 9). Scores and shots on target during the LGI trial tended to be more consistent and did not tend to deviate from the mean as much as those during the HGI trial (Table 6 and 7, Figure 10).



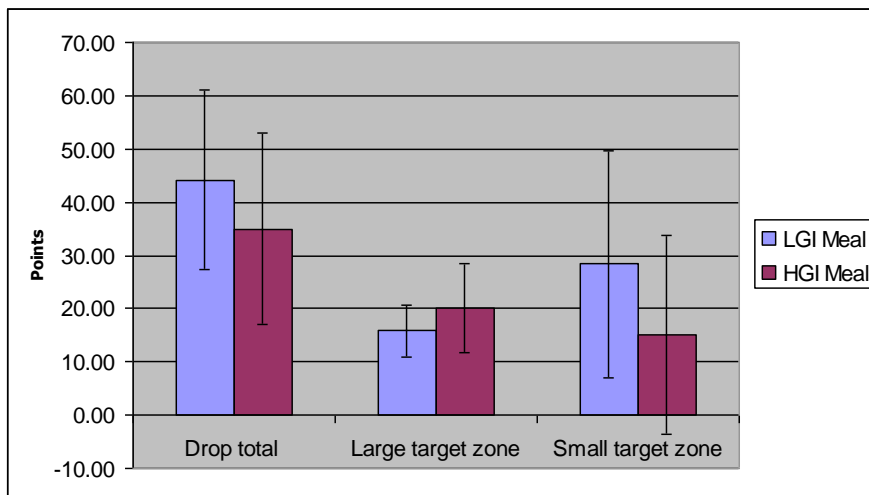
**Figure 6.** Overall Skills Test. Values are means  $\pm$  SD;  $n = 6$  subjects.



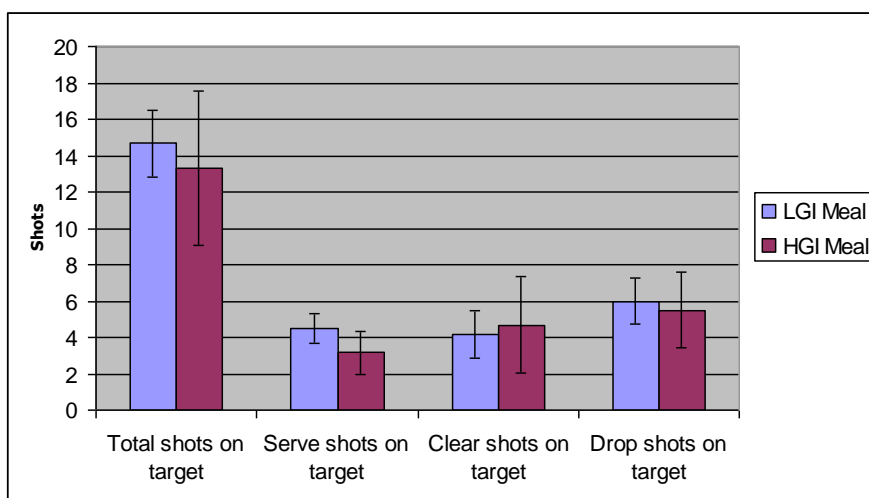
**Figure 7.** Long Serve Test. Values are means  $\pm$  SD;  $n = 6$  subjects.



**Figure 8.** Clear Test. Values are means  $\pm$  SD;  $n = 6$  subjects.



**Figure 9.** Drop Test. Values are means  $\pm$  SD;  $n = 6$  subjects.



**Figure 10.** Shots on Target. Values are means  $\pm$  SD;  $n = 6$  subjects.

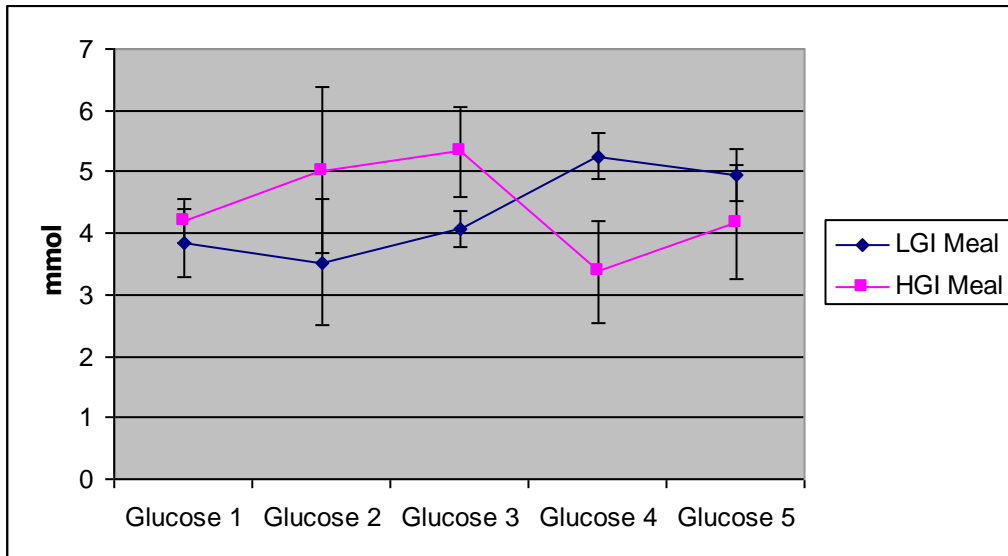
### 3.5 Blood analysis

**Table 8.** Results, Blood Glucose. Values are means  $\pm$  SD;  $n = 4$  subjects.

	<b>Blood Glucose 1 (mmol)</b>	<b>Blood Glucose 2 (mmol)</b>	<b>Blood Glucose 3 (mmol)</b>	<b>Blood Glucose 4 (mmol)</b>	<b>Blood Glucose 5 (mmol)</b>
<b>LGI Meal</b>	3.85 $\pm$ 0.37	3.53 $\pm$ 1.34	4.08 $\pm$ 0.74	5.25 $\pm$ 0.83	4.95 $\pm$ 0.92
<b>HGI Meal</b>	4.20 $\pm$ 0.55	5.03 $\pm$ 0.10	5.33 $\pm$ 0.29	3.38 $\pm$ 0.38 *	4.18 $\pm$ 0.42 **
<b>P value</b>	$P = 0.317$	$P = 0.655$	$P = 0.180$	$P = 0.180$	$P = 0.655$

\*  $P = 0.68$  from HGI Blood Glucose 3  
 \*\*  $P = 0.66$  from HGI Blood Glucose 4

Statistical analysis of blood glucose samples was conducted on  $n = 4$  as opposed to  $n = 6$  samples. After the second trial inconsistencies were observed for the results of blood glucose for the 4 subjects studied. Blood glucose samples were all recording levels below normal (Appendix 13, Blood Sampling). Following this trial a function control test was conducted on the meter in order to assess validity of readings recorded. Prior to running the function control procedure the researcher took a blood glucose sample approximately 1.5 hours after consuming a meal recording a reading of 2.8 mmol. Following function control procedure a further blood glucose sample was taken recording a reading of 7 mmol resulting in a 4.2 mmol differential between readings. For this reason blood glucose readings during this experimental trial can not be assessed. Due to subjects time constraints it was not possible to repeat this experimental trial on an alternative date.



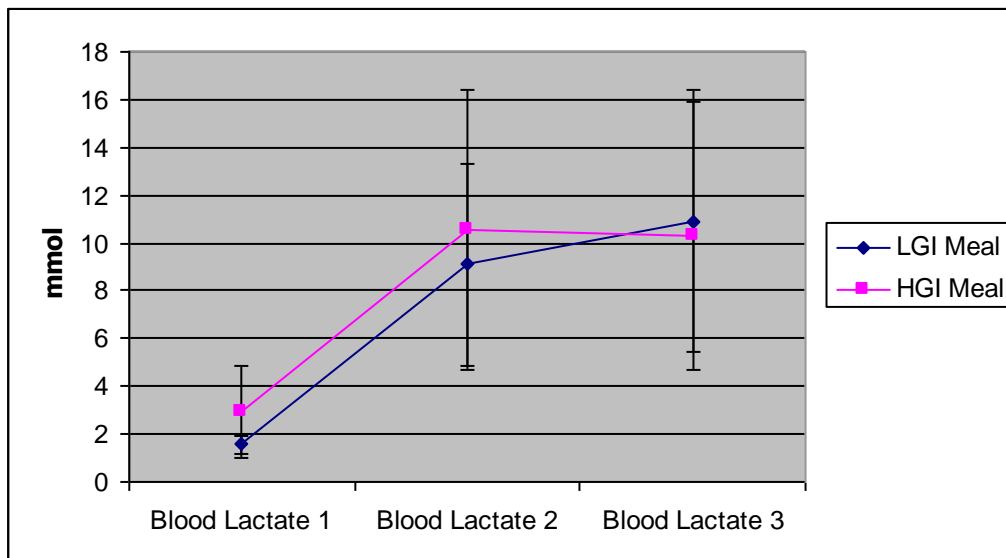
**Figure 11.** Blood glucose. Values are means  $\pm$  SD;  $n = 4$  subjects

Fasting blood glucose at the onset of both trials (LGI  $3.85 \pm 0.37$  mmol, HGI  $4.20 \pm 0.55$  mmol) was lower compared to control blood glucose ( $5.00 \pm 0.54$  mmol). Blood glucose concentrations rose during each trial for both LGI and HGI meals with no significant differences observed between meals (Table 8 and Figure 11). Blood glucose concentrations tended to rise more dramatically following HGI meal compared to the LGI meal. However blood glucose concentrations following the simulated badminton test (Figure 11. Glucose 4) seemed to fall dramatically during the HGI trial from  $5.33 \pm 0.29$  mmol to  $3.38 \pm 0.38$  mmol in contrast to the LGI trial where blood glucose concentrations continued to rise from  $4.08 \pm 0.74$  mmol to  $5.25 \pm 0.83$  mmol but this difference between trials was not significant ( $P = 0.180$ ).

**Table 9.** Results, Blood Lactate. Values are means  $\pm$  SD;  $n = 6$  subjects.

	<b>Blood Lactate 1 (mmol)</b>	<b>Blood Lactate 2 (mmol)</b>	<b>Blood Lactate 3 (mmol)</b>
<b>LGI Meal</b>	1.57 $\pm$ 0.37	9.12 $\pm$ 4.23	10.92 $\pm$ 5.51
<b>HGI Meal</b>	2.95 $\pm$ 5.87	10.53 $\pm$ 5.87	10.32 $\pm$ 5.62
<b>P Value</b>	$P = 0.141$	$P = 0.173$	$P = 0.917$

There were no differences in blood lactate concentrations between trials (Table 9). Blood lactate concentrations increased with exercise and mean blood lactate concentrations tended to be above 8 mmol following the multistage shuttle run test (LGI 9.12  $\pm$  4.23 mmol, HGI 10.53  $\pm$  5.87 mmol) and the simulated badminton performance test (LGI 10.92  $\pm$  5.51 mmol, HGI 10.32  $\pm$  5.62 mmol) (Table 9 and Figure 12).



**Figure 12.** Blood lactate. Values are means  $\pm$  SD;  $n = 4$  subjects