



		Insulin ( $mUL.ml^{-1}$ )		Cortisol ( $ng.ml^{-1}$ )		Growth hormone ( $ng.ml^{-1}$ )	
		Before TWHITP	After TWHITP	Before TWHITP	After TWHITP	Before TWHITP	After TWHITP
G1	Rest	9.8 ± 7.0	10.2 ± 6.2	114.5 ± 27.3	119.9 ± 29.0	2.4 ± 2.6	2.8 ± 2.0
	End	15.3 ± 8.3	18.1 ± 8.1	138.5 ± 36.2	150.4 ± 33.9	17.1 ± 13.5	14.9 ± 13.1
	5 min	22.4 ± 9.6	22.9 ± 9.2	146.5 ± 31.0	158.7 ± 30.8 *	18.5 ± 13.8	16.7 ± 12.5
	10 min	18.3 ± 7.6	18.1 ± 7.4	173.0 ± 43.3	165.7 ± 30.9	19.4 ± 13.8	19.8 ± 14.0
	20 min	16.9 ± 3.5	17.1 ± 5.5	166.5 ± 54.2	155.3 ± 38.2	17.3 ± 12.9	17.6 ± 12.2
	30 min	13.1 ± 5.6	12.9 ± 5.4	148.5 ± 58.8	132.5 ± 43.9	13.1 ± 10.4	12.5 ± 10.9
G2	Rest	10.7 ± 6.3	14.8 ± 13.3	134.0 ± 58.5	119.5 ± 79.4 *	0.5 ± 0.5	0.7 ± 0.6
	End	21.4 ± 14.7	19.8 ± 16.3	171.0 ± 50.6	144.1 ± 83.4	18.6 ± 13.5	14.5 ± 14
	5 min	34.0 ± 18.7	25.1 ± 19.0	176.0 ± 62.6	153.1 ± 95.9	18.6 ± 11.4	14.1 ± 12.3
	10 min	23.0 ± 11.9	18.1 ± 13.6	220.5 ± 63.1	175.7 ± 103.1	19.2 ± 10.0	14.6 ± 11.4
	20 min	17.9 ± 7.6	15.8 ± 10.9	230.5 ± 68.0	181.9 ± 107.1	17.9 ± 8.7	14.0 ± 10.4
	30 min	14.9 ± 6.8	12.9 ± 8.5	204.5 ± 56.0	161.6 ± 96.7	15.1 ± 7.7	12.5 ± 9.6

Tableau n ° 1: Mean values ( $\pm$  SD) of plasma concentration of insulin, cortisol and growth hormone before and after TWHITP in G1 and G2,

**Findings** – our results showed that MAS was in G1 compared to G2 ( $p < 0.001$ ) between Pre and Post – test. However no significant increase was observed on  $VO_{2MAX}$  in G1 and G2 AT POST –TEST compared to pre –test. For G1 our results showed a significant increase ( $P < 0.01$ ) ON TLIM100 performance and  $d_{lim100}$  performances in response to TWHITP. Our results showed that before during and after the TWHITP 10000m and 5000m performances were significantly improved ( $0.001 < p < 0.05$ ) on G1 compared to G2.

**Conclusion** – Performances were significantly improved in G1 only with using 10 repetitions per HITS calibrated reference to  $t_{lim100}$ .

**Practical implications** – Results showed that the TWHITP induced a significant improvement on MAS in both groups between the Pre and Post –test without any increasing in  $VO_{2MAX}$  these results can be returned to the insufficient volumes HIT over the TWHITP to reach the trainable limit for  $VO_{2MAX}$ .