

News

The results of the recent World championships in Karapiro, New Zealand (see Appendix 1 below) show that the leaders, Great Britain have made their position stronger: last year they won six medals in Olympic events, one of them gold, but this year they won nine medals, four of them were gold. The Brits definitely intended to smash their opposition during their home Olympics-2012.

The hosts of the championships, New Zealand won seven medals in Olympic events, three of them were gold. This is one step up compare to the last year, when the «kiwis» got “only” five medals.

The Aussies increased their rank from seventh place last year to third. They doubled the amount of medals compare to 2009 with four medals now, though no gold among them, except gold Thomas Keller medal awarded to the great James Tomkins.

The Germans have fallen from second place down to fourth, with only three medals after five last year. This bitter fact was sweetened by the most prestigious gold medal in M8+.

The Greeks under wise leadership of Gianni Postiglione increased their rank from the ninth place last year to the fifth now. They got three medals, one more compared to 2009, though no gold this year.

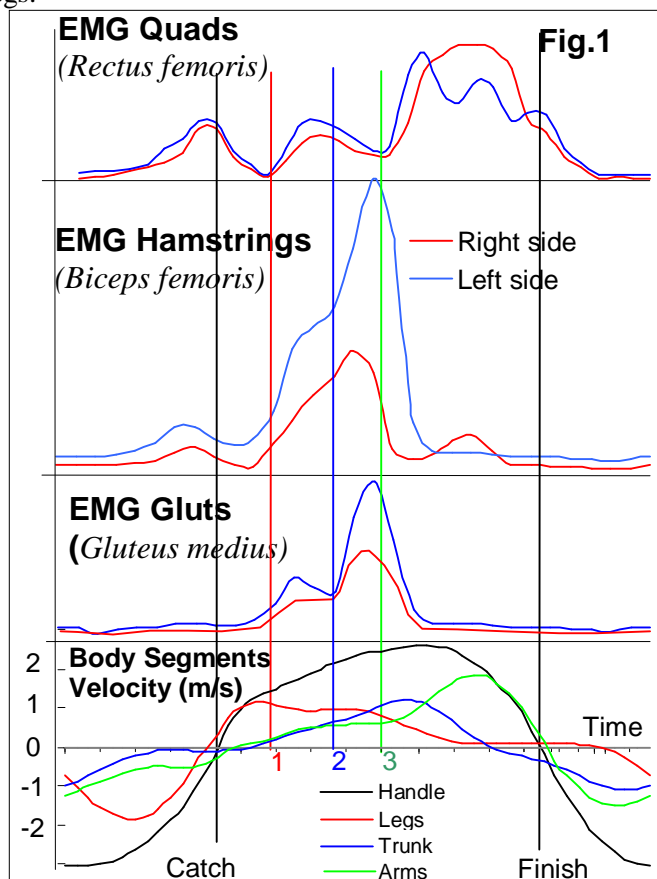
The Americans conclude the six best countries of the World with more points than Greeks, but with only two medals, which is one less than last year.

Facts. Did you know that...

...using EMG (electro-myography) is the best method to study muscle activity in any human movement? A pilot study was conducted on a mobile rowing ergometer with the purpose to evaluate the sequence of muscles activation during the stroke cycle. Three most powerful muscle groups were chosen: quads (*Rectus femoris*), hamstrings (*Biceps femoris* and *Semimembranosus*) and gluts (*Gluteus medius*). Delsys Myo-monitor® wireless EMG system was used and eight electrodes were placed on right and left muscles of the above groups. Six samples were taken on a sculler of an international level at the stroke rates 20, 24, 28, 32, 36 and 40 str/min. Fig.1 below shows the EMG of three major muscle groups at 36str/min in conjunction with velocities of the body segments.

Activity of the quads began significantly earlier than the catch, because the rower needs to decelerate the relative movements of the masses at the end of recovery and then start their acceleration at the beginning of the drive. It is interesting that activation of the quads decreased down to zero after the legs achieved their maximal velocity (moment 1 on Fig.1) and the rower started using his trunk. Hamstrings and gluts rapidly increase its activation at this moment. This could be a specific feature of this rower as he

has a hump in the legs velocity curve at the same time, which may indicate a lack of coordination of activities of the quads and hamstrings (RBN 2008/07). The pattern of the quads activation has three peaks during the drive and the second peak (moment 2) corresponds with the second peak of legs velocity. The third peak of the quads activation occurred at the finish of the drive – beginning of recovery has the highest electrical activity. This can be explained by a hip flexion action (*rectus femoris* is connected to the pelvis) and pulling the stretcher through, which requires straight legs.



The peak of trunk velocity (moment 3) coincides with the peak of EMG of hamstrings and gluts, which produces the highest power during the drive through rotation in hip joints.

It is noticeable that EMG curves are quite asymmetrical: left hamstring and glut produce higher electrical impulse at the middle of the drive, but right quads do more at the finish of the drive. This could be related to a specific injury of the athlete.

Concluding, **EMG method shows a good correspondence with mechanical variables of rowing and may be used for evaluation of rower’s technical effectiveness.** The method requires further development of the analysis routine based on various patterns of rowing technique both on-ergo and on-water.

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Appendix 1

Ranking of the countries based on results in 14 Olympic events on the World Championship 2010 in Karapiro, New Zealand and its comparison with results of 2009 World championship in Poznan, Poland.

Rank 2010	Country	Number of places 2010							Medals 2010	Points 2010	Rank 2009	Medals 2009	Points 2009
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th					
1	GBR	4	4	1	2	2			9	75	1	6	50
2	NZL	3	1	3		1	2	2	7	54	3	5	39
3	AUS		2	2	3	1		1	4	38	7	2	23
4	GER	1	1	1	2	1	3	3	3	39	2	5	55
5	GRE		1	2					3	16	9	2	14
6	USA	1		1		3	1	1	2	25	5	3	27
7	CAN	1	1		1	1		1	2	22	13	1	13
8	ITA		2		1		2		2	20	12	1	16
9	FRA	1		1			1	1	2	16	6	2	27
10	CZE	1			2				1	16	8	2	18
11	CHN			1		2	1	2	1	15	23	0	3
12	SWE	1						1	1	9		0	0
13	CRO	1							1	8	21	0	4
14	BLR		1						1	6	14	1	10
15	UKR		1						1	6	16	1	8
16	ROU			1				1	1	6	11	2	12
17	POL			1					1	5	4	4	32
18	NED				1	2			0	10	10	2	12
19	NOR				2				0	8	24	0	2
20	RUS					1	1		0	5	22	0	4
21	POR						1		0	2		0	0
22	SLO							1	0	2	15	1	9
23	SRB							1	0	2	25	0	3

Red colour means improvement,
blue colour – decrease of results.