



Dépister  
simplement  
la fatigue...

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## Modèle

$$\hat{p}_n = p^* + k_1 \sum_{i=1}^{n-1} w_i e^{-(n-i)/\tau_1} - k_2 \sum_{i=1}^{n-1} w_i e^{-(n-i)/\tau_2}$$



Busso et al. 1994, EJOAP, 69: 50-54

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Fatigue  
objective  
Subjective ...  
+  
Symptômes

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**Baisse  
de la performance  
en compétition...**

**... mais aussi à  
l'entraînement**

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### Normaliser les performances

Meilleure Performance = 17 min  
 17 min = 100 %  
 17 min 30 s = 17,50 min  
 16 min 48 s = 16,80 min  
  
 $(17 \times 100) / 17,50 = 97,1\%$   
 $(17 \times 100) / 16,80 = 101,2\%$

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### Normaliser les performances

1500			1500		
mn,s	mn,%	%	mn,s	mn,%	%
20	20	101,6	19,3	19,5	104,2
19,59	19,98	101,7	19,29	19,48	104,3
19,58	19,97	101,8	19,28	19,47	104,4
19,57	19,95	101,9	19,27	19,45	104,5
19,56	19,93	101,9	19,26	19,43	104,6
19,55	19,92	102,0	19,25	19,42	104,7
19,54	19,90	102,1	19,24	19,40	104,7

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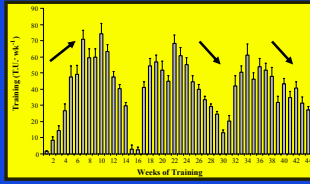
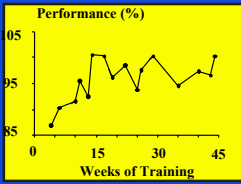
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# Performance et entraînement



Mujika et al. 1996, MSSE, 28: 251-258

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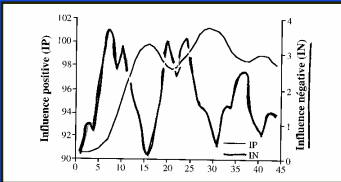
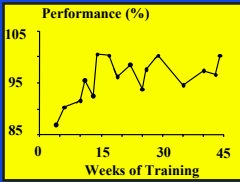
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# Modèle mathématique



Mujika et al. 1996, MSSE, 28: 251-258

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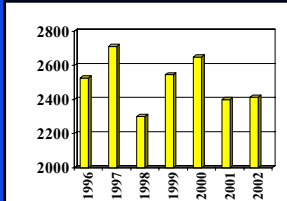
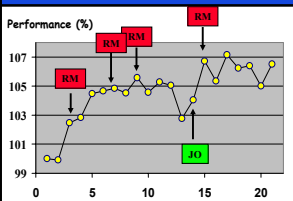
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# Volume : Grant Hackett



De 1996 à 2002

Chatard et Cottrell 2000 (données non publiées)

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## Normaliser les séries à l'entraînement...

500			500		
mn,s	mn,%	%	mn,s	mn,%	%
7	7	95,4	6,3	6,50	102,8
6,59	6,98	95,7	6,29	6,48	103,0
6,58	6,97	95,9	6,28	6,47	103,3
6,57	6,95	96,1	6,27	6,45	103,6
6,56	6,93	96,3	6,26	6,43	103,8
6,55	6,92	96,6	6,25	6,42	104,1
6,54	6,90	96,8	6,24	6,40	104,4

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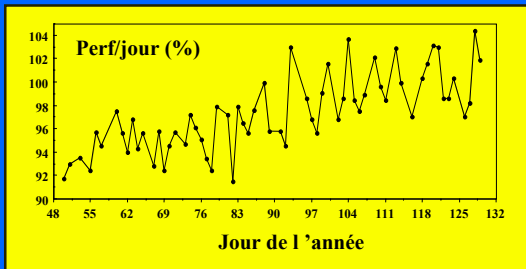
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## Variation quotidienne de la performance




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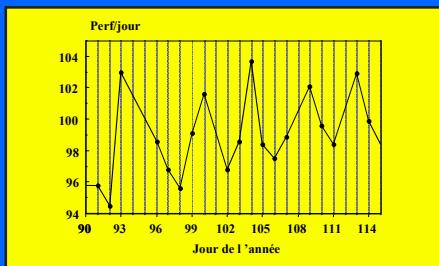
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## Périodicité de 4 à 7 jours




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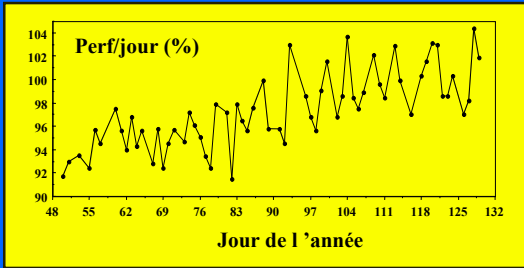
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## Variation quotidienne de la performance



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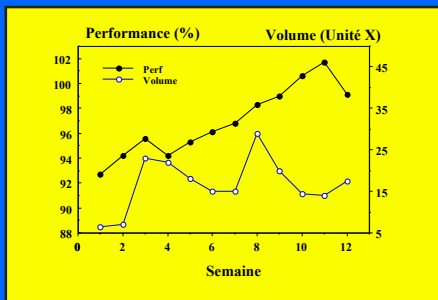
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## Adaptation du volume % à la performance de la semaine



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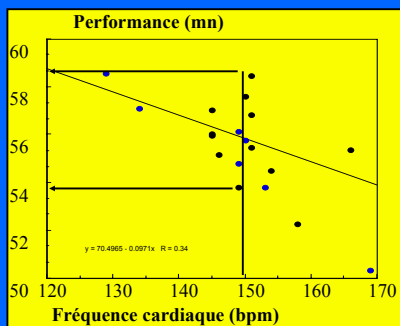
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## Performance et fréquence cardiaque



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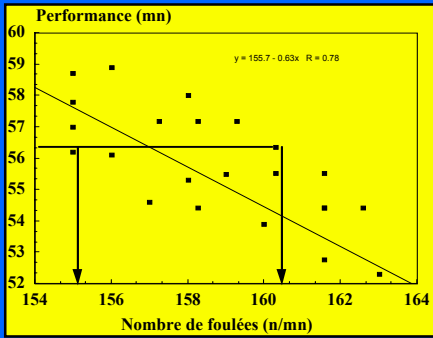
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## Performance et fréquence cardiaque



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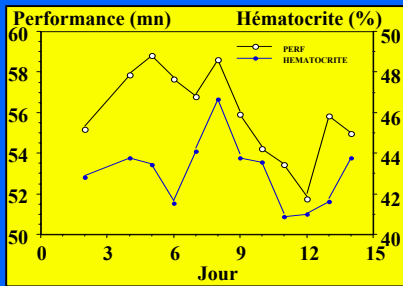
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## Performance et Globule Rouge



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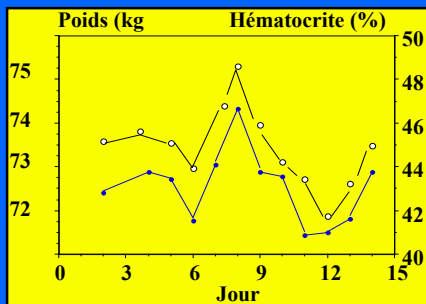
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## Performance et hémocrite



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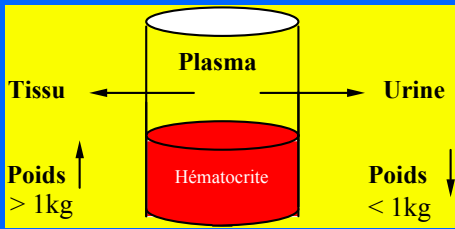
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## Performance et diurèse...



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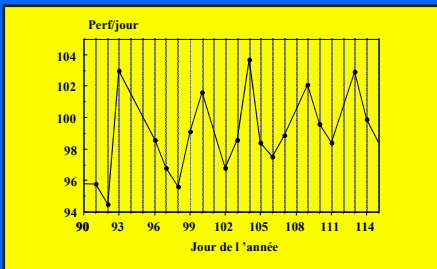
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## Périodicité de 4 à 7 jours



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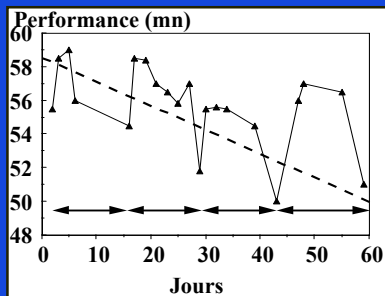
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## Périodicité de 11 à 14 jours



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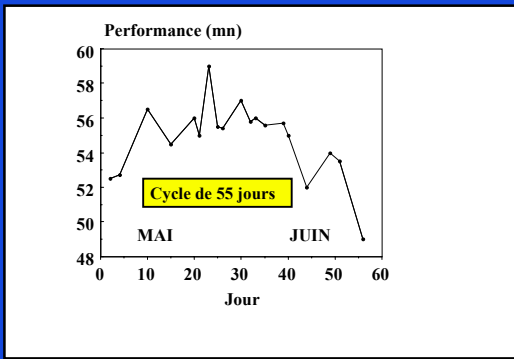
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# Les cycles longs



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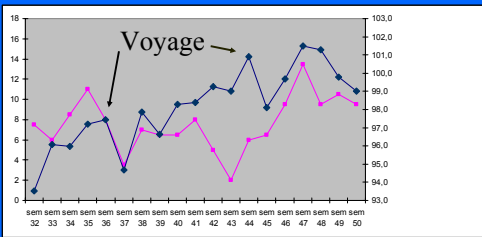
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# Effet ponctuel d'un voyage...



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# QQs précautions

Echauffement =  $\pm 4.3\%$

Matin - Soir =  $\pm 3.3\%$

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# Questionnaire de fatigue

Q1: Est ce que j'ai trouvé l'entraînement difficile ?

Q2: Est ce que j'ai plus dormi ?

Q3: Est ce que mes jambes étaient lourdes ?

Q4: Est ce que j'ai attrapé froid ?

Q5: Est ce que ma concentration était plus difficile ?

Q6: Est ce que j'ai travaillé moins efficacement ?

Q7: Est ce que je me suis senti plus irritable ?

Q8: Est ce que j'ai été plus stressé ?

Chatard et al. Sciences et Sport 2003  
 Atlaoui MSSE in press Feb 2004

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## Echelle



Pas du tout                      moyennement                      beaucoup

Est ce que j'ai trouvé l'entraînement difficile ?

Score total =  $\Sigma$  des réponses de chaque question

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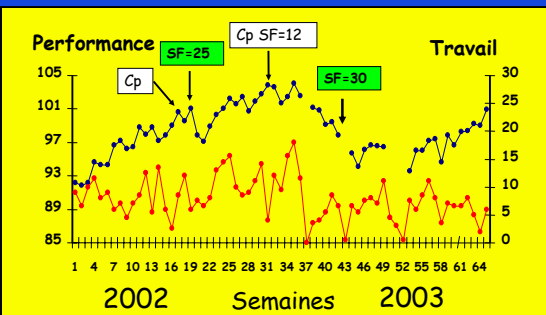
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# Le surentraînement




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## Dépassement et surentraînement

Phase de Surcharge



Affûtage 3 semaines



Récupération  
OK

Pas OK =  
Surentraînement

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Maintenant tais-toi !  
Tu nous fatigues !



Merci de votre attention...

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