

**Dear rowing coaches,  
rowers and all  
rowing people!**  
☺ **We wish you a  
Merry Christmas and  
Happy New 2005  
Year!**



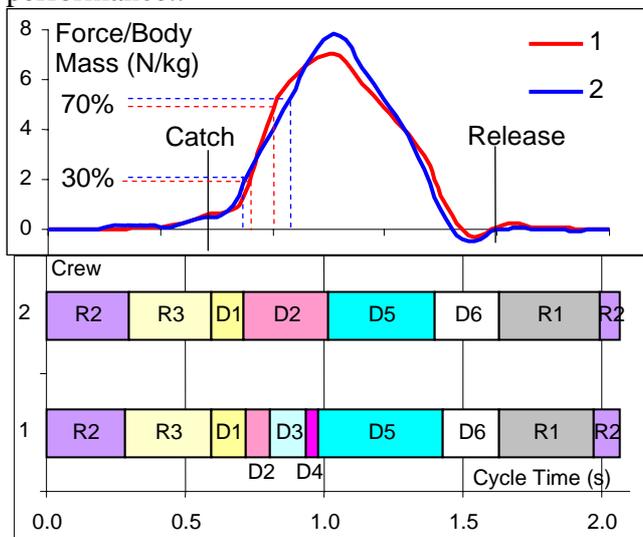
**Fact. Did you know that...**

✓ ...it is very important to increase force up to 70% of its maximal value as quickly as possible? We now use criterion 30% for evaluation of the quickness of the force increase at the beginning of the drive. Traditionally, the arc between the catch and the point where force increases up to this level, is called a “catch slip”.

We investigated all criterion from 10% to 100% with 10% increments and found that criterion 70% had the highest correlation ( $r=-0.46$ ) with the duration of the micro-phase D3 (initial boat acceleration). This means: the faster you increase force up to 70% of your maximum, the longer the duration of the D3 micro-phase. This creates faster moving support for further acceleration of the rowers’ mass.

Current criterion 30% has the highest correlation  $r=0.91$  with duration of D1 “blade insertion” micro-phase. This means: the faster you increase force up to 30% of your maximum, the sooner you will start acceleration of the system.

A good illustration of this fact can be found in RBN 2004/2. On the figures below you can see the force curves of two crews together with timing of the micro-phases. It was postulated that crew 1 had much more efficient technique and better performance..

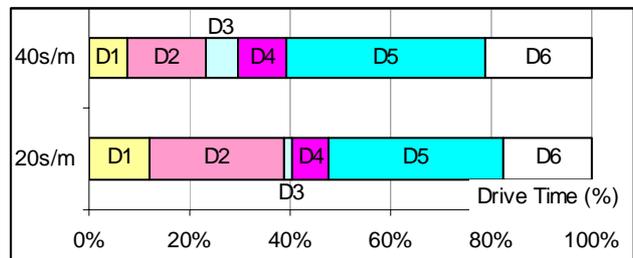
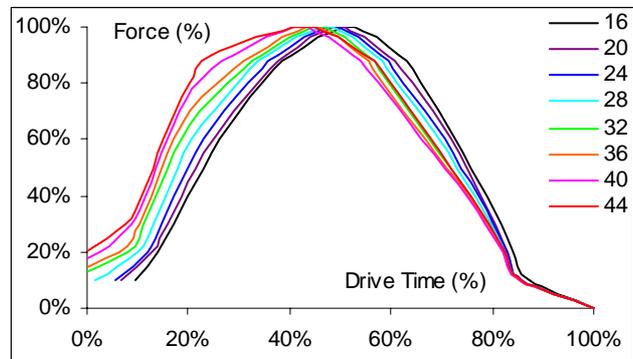


If we measure the time of the force increasing using 70% criterion, then it was shorter in crew 1 (23.1% of the drive time) compared to crew 2 (30.5%).

However, if we were to define “catch slip” using the 30% criterion, then we would find that the second crew increases force faster (14.2%) compared to that of crew 1 (15.1%). All other features of the rowing technique of these two crews are well described in the referred Newsletter.

**Ideas. What if...**

✓ ...we try to find some new methods for training of the quickness of the force application after catch. The first thing we should take into account is dependence of the force application on the stroke rate. The figures below show average force curve profiles at stroke rates from 16 to 44 and the temporal structure of the drive at 20 and 40s/m. More than 1500 samples were used to obtain these curves.



It is obvious that the higher the stroke rate, the earlier force application occurred. The biggest changes in the profile happened at force levels from 70 to 90% of maximum. It required 14-16% less relative time to achieve 70-90% of the max. force at 44spm than at 16spm. In comparison, using the 30% criterion this difference is 8.1%, and for the 100% criterion it is 8.1%. Correspondingly, D1 and D2 are much shorter, but D3 and D4 are much longer at 40s/m.

One great coach said that rowing at a high rate differs from rowing at a low rate as much as running differs from walking. During long low rate training we should remember that we will race at high rate. Always try to maintain fast force application and temporal structure of the drive as it was described above.

**Contact Us:**

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