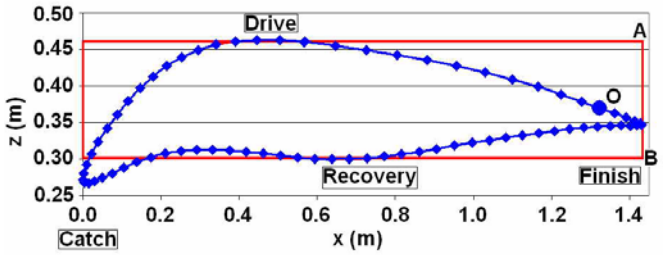
Dr. Volker Nolte of University of Western Ontario, London/Canada kindly shares his ideas and experience with us:

Myths and reality about the release

The "handcurve" is the path of the handle relative to the boat, when you look from the side. Many coaches still believe that the "ideal" handcurve should look like the rectangle in the Figure below. You still find the same idea of the handcurve in certain coaching literature, so that coaches find their belief officially supported (1, 2).



However, a common shape of a real handcurve looks like the line with diamonds. This handcurve was obtained from a video analysis of a international level single sculler. The question is: Why would one still teach the "ideal" handcurve that is in fact impossible to execute in real life? While it could be argued that there are theoretical reasons to use the "ideal" handcurve as a model, one could also make a case that if coaches understand rowing biomechanics correctly, they could teach technique more effectively.

DEFINITION. The catch and the finish are distinct points of the stroke representing single moments in time. The entry, drive, release and recovery are phases that take some period of time. The catch is defined as the furthest point of the handle towards the stern. The finish is the furthest point towards the bow. The release is defined as the process of the blade removal from the water. The following discussion focuses on the release, finish and the first part of the recovery.

THE IMPOSSIBLE RECTANGLE. The idea behind the rectangular handcurve is comprehensible: the blade should propel the rower/boat system as long as possible. However, in a moving boat it is physically impossible to keep the blade fully covered until the handle reaches the finish position. If a rower were actually to try to follow the rectangular handcurve, the handle would reach point "A" on the handcurve. At this moment, the blade would still be fully covered in water, but the handle cannot move any more horizontally relative to the boat. The handle and blade velocities in x-direction relative to the boat are zero, i.e. they move with the boat velocity relative to the water. This would end in a complete boat stopper that we call a "crab"! The movement from the point "A" to "B" takes at least 0.1 s. During this time, a boat at race pace travels between 0.4 to 0.6 m. This means a rower cannot possibly carry out a completely vertical movement with the handle.

THE RELEASE IN REAL ROWING. The considerations above should clarify that we can, under no circumstances, experience the rectangular handcurve. So, how does a handcurve have to look like? The diamonds in the figure signify the handle coordinates for each video frame. This means that the distance between two adjacent diamonds is a measure for the velocity of the handle. The largest horizontal velocity of the handle during the drive is found around x=0.9 m. The horizontal handle velocity has to decline, since it has to reach zero at the finish position. In between, the handle velocity passes a point, where the blade has to be out of the water, since it would create resistance after that.

At the point "O" the blade is completely out of the water. Some time prior to this point, the rower needed to start the removal of the blade, which is a continuous pull on the handle with a simultaneous movement down. This complex movement is difficult, since any improper coordination leads to an ineffective release.

Another interesting phenomenon: after passing through point "O" the rower continues to move his hand horizontally towards the body while the blade is already completely removed from the water. This movement is vital to give the rower the chance to decelerate the handle to a final stop without causing negative forces on the blade.

PRACTICAL APPLICATION. It is questionable that the "rectangular model" can work efficiently in teaching rowing technique. One can often hear from coaches who use the rectangular model that their rowers "have poor bladework in the release". It is important that coaches learn how a handcurve with a proper release should look like and then try to find creative ways to teach it.

References

Smith N. (1989). Rowing and Sculling. Geelong, Australia.
Spracklen, M. (2005). Bladework. Presentation in Saratoga.

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