

Skimming the Surface : Teaching Kayak Support Strokes and Rolls

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Abstract

Several articles published recently investigate the biomechanics and teaching of kayak support strokes and rolls. Authors have taken the view that the techniques can be reduced to small components and then investigated in a simplistic manner. The present article seeks to take a wider view of the process the kayaker employs to support or right the boat. These techniques are seen as a continuum and the suggestion is made that this should be reflected in the approach taken to teaching.

Introduction

Let us begin with a question : how is it possible for anyone to execute a 'no hands roll' ?

In their recent article, Bunyan and Gibbs (1995) suggest that students taught a pawlata roll are more successful than those taught a screw roll and that this is the result of the advantage of increased leverage. Bunyan (1992) applies similar arguments to support strokes. The expert roller in the question posed above has no access to any sort of extended lever, in fact effective use of the torso and head is the only tool at the rollers disposal. Anyone reading this who can either execute this roll (or even a hand-roll) or has observed one being performed will know that the rotational movement of the boat away from the upper body is the key to success. There are useful diagrams to illustrate this in Rowe (1988), Nealy (1986) and Bailie (1991). Day and Elwin (1992) and Bailie (1991) describe this body movement as 'C to C' positions (based on the shape of the body as the kayaker reaches for the surface and at the end of the roll with the 'hip flick' completed) and credit the terminology to a teaching approach favoured in New Zealand. 'The Kayaker's Edge', a recent American instructional video cassette also expounds this approach (Ford, 1992). This video also provides an excellent demonstration of the importance of the rotational movement of the boat in a sequence showing a kayaker executing a 'no hands' roll (Ford, 1992).

It is our contention that all rolls are nothing more than deep support strokes (albeit with water up ones nose !) and that all support

strokes require a common strategy. There is little new in this approach as it is taken by many experienced teachers of kayaking. A wide variety of methods and their variants are employed, and the majority of experienced teachers have several favourite methods in their 'tool bag'. It is not our purpose to discuss various methods; rather to consider principles of skill acquisition and transferability.

Day and Elwin (1992) in their cleverly titled article 'Learning to Roll or Rolling to Learn?' provided evidence to support the belief of many teachers that 'the teaching of rolling as the very first skill in a kayaking course enhance(es) subsequent skill acquisition'. In this article we seek to argue the case for a holistic approach to the whole area, and to move the debate on from simplistic biomechanics.

The Urge to Breathe !

Ask any teacher of kayaking their opinion as to the most common fault in aspirant rollers and you will most likely get the answer 'head up too early'. The reason for this is in a sense obvious, the novice paddler has breathing as top of the priority list. The experienced roller, particularly in a situation where a swim would be hazardous, realises that there are worse things than having to hold one's breath for a little longer. Allowing the head to follow the rotation of the body, which in turn follows the rotation of the boat, is the key to success. Success in rolling is vital for our experienced paddler.

The same arguments apply to the low and high support strokes except that these strokes

are essentially preventative of a capsized rather than remedial. Sculling for support generally has a different function and we intend to deal with it as a special case later in this article.

'Open' and 'Closed' Skills

Let us pose another question : 'what are we learning these skills for ?' The answer to this is clear. It is not really important in the pool, what we strive for is success in the real situation. Time spent developing a skill is most effective when the learning can be applied in a variety of other contexts. This is an 'open' skill and is what we actually try to develop in our students. A support stroke or a roll must be available when its needed and this will occur in a wide variety of fairly random circumstances. Common to all these situations is a loss of balance and the need to recover. The skill itself is applied subsequent to a decision being made as to *when* to deploy the particular technique. To an observer this will appear more as an instantaneous reaction (particularly in difficult white water situations) than a premeditated decision. Nonetheless, a reactive and adaptable skill has to be learnt and a tactical approach taken to its deployment.

Now let us compare this with a situation where the student learns the set up for and execution of a pawlata roll. This is, in this context an example of a 'closed' skill. It does not encourage the student to carry forward skills which can be applied in other support stroke situations or even to other rolls. It is closed in the sense that it is a sort

of 'stunt' ! By using this word we do not intend to cause offence to its devotees - it can be a very useful stunt. However, consider what is happening during its execution: the hands are shifted to a new place on the paddle for the roll itself and then returned to the correct position afterwards. In a sense this is no different to a number of clever tricks accomplished rollers can perform. The difference is that a number of kayak teachers have over the years found it to be a successful way of getting students to achieve their first roll. We have of course enjoyed our students success and thought that this was a good job done. Whilst success is a very strong motivational force for our students (and for us as teachers) and its value must not be dismissed, we should address the issue of whether or not we are encouraging good (open) habits.

Interestingly enough Bunyan and Gibbs (1995), when they report on the work of Day and Elwin (1993) and Foster (1990), acknowledge that 'whilst theoretically the screw roll might be harder to learn, it did eventually lead to better rolling technique'. This is surely the crucial point, namely that kayakers need to be able to roll and support when it matters, and in order to develop this skill they need to focus their efforts on adaptability. This makes the decision of Bunyan and Gibbs (1995) to investigate the comparative success of the pawlata and screw rolls somewhat puzzling. At best the pawlata roll gives the kayaker the opportunity to experience the feeling of righting the boat; at worst the mechanical advantage of the longer lever can result in reliance on the lever rather than on proper body movement. This is counter to the development of good technique. In addition there are always going to be aspects of the pawlata (hand movements) which will need to be unlearned or at least pushed into the skill memory archive.

There are a number of further aspects of the Bunyan and Gibbs (1995) paper which give rise to confusion. Not the least of these is the use of only 8 students to test the hypothesis. We have also argued above that student 'learning' is the important issue rather than 'performance', and we therefore take issue with the measurement scale employed. The techniques employed to generate the figures cited for the mechanical advantages, paddle blade angles (given to one hundredth of a degree !) and working surfaces are not explained and we can therefore make no comment.

Support for Sculling ?

There is a preoccupation amongst young (often male !) kayak instructors with the demonstration of the perfectly executed flat water scull for support. This is perhaps not that surprising as it requires good balance and technique and is guaranteed to impress admiring students. Furthermore it gets a place as a BCU Three-Star skill (this is supposed to be assessed on flat water) and *must* therefore be important. Time for another question : has the reader ever seen anyone employ the stroke in earnest on flat water ? We certainly have not, but we do regard it as indispensable in white water and especially in stoppers.

In his 1992 paper Bunyan heads the text with a photograph of the flat water version of the stroke and describes its mechanical advantage. In order to do the stroke on flat water the paddler tends to reduce the turning moment around the axis of rotation by leaning back on the deck. The paddlers body tends to rest on the water with the buoyancy aid lending some support whilst the paddle is sculled to and fro out to the side but somewhat astern of the cockpit.

So what position is assumed when the stroke is being used for real, say in a stopper ? In this case, depending on the size of the wave, the paddler stays more or less upright in the boat with the elbow on the paddling side low. When the paddler is side surfing well, he or she is properly balanced in the boat, using mobility in the waist to adjust to variations in the waveform. Most teachers tend to encourage good practice by suggesting that the student relies on support from the paddle as little as possible. A failure to retain this 'light touch' results in the paddler oscillating between a near capsized on the downstream and upstream sides of the wave.

How then does the BCU flat water version and Bunyan's mechanical analysis of the stroke relate to the above description of reality ? Not at all, would be our contention. This is not to say that there is no point in teaching the stroke, nor that it can never have a use on flat water, rather that any mechanical analysis of the stroke must take account of its execution for its eventual purpose. Bunyan's analysis brings it in with other support strokes and we are arguing that it is not like these either in execution or deployment.

Whilst there are aspects of the BCU version of the stroke which can be considered as 'open' (eg feel for the paddle on the water surface, lower body / upper body flexibility etc) the stroke is often considered to be a skill in it's own right. The reason we are making such a fuss is that we believe that the study of it (Bunyan, 1992), and more particularly the teaching of it should be based on its real use. A biomechanical analysis of the stroke based on a flat water situation is unlikely to aid our general understanding.

How Skills are Learned

The 'open' nature of kayaking dictates that each time a skill is used it is unique. The large number of variables present can never be exactly synchronised to demand identical responses from the kayaker. Although highly similar situations will occur the notion of *the sweep stroke*, *the high support stroke* or *the Eskimo roll* must yield to more general terms such as sweeping, high-supporting and rolling. To be meaningful these activities and others may be referred to as 'skills' of kayaking but should not be confused with 'techniques'.

'Technique' may be thought of as the movement pattern or *observable* aspect of a 'skill', whilst processes such as perception and decision-making are also vital contributions to skilled behaviour. Sharp (1992) considers that 'it is vital that the learning process shows the learner how and when to apply technique'.

Rolling techniques such as screw, storm or pawlata will only be of benefit to the kayaker if he or she is able to apply them in context and at the correct time. We are all aware of those who can execute technically sound rolls in the pool but lack any degree of consistency in the river or sea. Their performance of various 'techniques' may be excellent but they may suffer from a lack of proper practice for coping with the many additional problems encountered in the real situation.

Indeed, evidence strongly suggests that the way in which practice is presented to learners is crucial in the application and development of their skills. According to Hardy and Fazey (1987) the ability to transfer skills to a number of situations is 'dependent on whether the practice conditions encourage

it or discourage it'. Therefore, practice time should take account of the need to solve problems arising from capsized or near-capsized. Again, Hardy and Fazey (1987) have a few words to say on the subject.....'Practising solutions is like passive osmosis when what is needed is active digestion. The performer needs to be repeatedly confronted with the problems.....To learn is to progress, create, invent. The learner needs to practise the means by which solutions to movement problems are obtained'.

Presentation of such problems demands knowledge and understanding on the part of the teacher. To be effective the teacher needs to know what good kayakers 'do' and should apply the principles of skill acquisition in helping their charges progress from beginner towards expert.

Emphasising variability is an important consideration in this regard. Technical variations on the themes of the skills are demanded. So, if 'rolling' is 'recovery from a capsized position' the variations on this theme are the types of roll and the multitude of adaptations needed to cope with the wide range of contexts and situations.

'Specific practice leads to high reproducibility, varied practice leads to high adaptability' (Hardy and Fazey, 1987). So, if we practice in different situations and create opportunities for adaptable skill deployment, learning is relevant to all those situations and significantly to situations which have *not yet* been encountered by the kayaker.

The role of the teacher is therefore vital in order to ensure that success predominates as students learn to deal in a meaningful way, with the problems of a capsized. This approach should emphasise the *critical* features of the skill and the principles of the process. On a practical basis the teacher can encourage development of *any kind of support* which develops an effective body movement allowing subsequent righting of the kayak. A wide variety of techniques might be practised such as :- draw strokes and sculling underwater; front to back sweep; back to front sweep; high support with the paddle at various angles relative to vertical; storm roll; hand roll etc. Variations may be practised on the basis that a roll has just 'failed' :- adding a support stroke on the end of a roll; supporting on the other side after a too successful roll; losing and regaining grip on the paddle shaft; failing to roll on one side and switching to the other etc.

We have argued that without a context and without consideration of the difficulties encountered by a capsized kayaker the pawlata roll may be learned as a discrete, sterile technique which, far from initiating a sound learning process towards the *skill* of rolling, may well interfere with the process. An emphasis on this particular teaching technique concentrates effort on the use of increased leverage when time might be better spent on underwater orientation, active demonstration of the 'C to C' principle (see Bailie, 1991; Day and Elwin, 1992 and Ford, 1992), and basic technique which does not require movement of the hands along the paddle. At best the pawlata roll

can be regarded as a technical variation which only achieves skill status when it is tactically applied. For example, most would agree that it's increased leverage is of value to sea kayakers and is useful as a backup in river situations when other rolls have failed.

It is perhaps worth remembering that the pawlata was initially an Inuit Eskimo technique (see Hutchinson, 1988 for a description) brought to Europe in 1927 by Edi Pawlata. His roll was based on extending the paddle as this was the technique employed by the Inuits who used short, unfeathered, narrow-bladed paddles. They shifted their hands for a variety of strokes in normal paddling, often holding the middle of the shaft with one hand and the end of a blade with the other. Their use of the paddle for rolling was a natural extension of their normal range of strokes. This contextual significance is of obvious importance as in modern paddling we use a different shape of paddle and a different 'home base' for our hand positions. Consequently, all modern strokes other than the pawlata roll and its variants are executed with the hands on the loom.

We therefore contend that there is little logic in the use of a pawlata as a contemporary means of learning to roll. Far from being a technique to introduce the novice to rolling, the pawlata is best justified as one of many technical variations which only become meaningful when learned as a later order skill.

Conclusion

If the genie of the lamp offered us *one* totally reliable roll (or support stroke) we would choose the 'wherever the paddle happens to be' roll ! This isn't as ridiculous as it seems. Cast your mind to the image of a good paddler in a tricky situation and run it through in slow motion (good paddlers often seem to have all the time in the world so this shouldn't be too difficult). The paddler seems to be able to recover or roll whatever the cause and wherever the paddle happens to be, as long as it's somewhere out to one side and somewhere near the surface. Its sole function is to provide, momentarily, a platform to first rotate the boat and then the body. Agreed, this represents a skill employed at the highest level and many beginners will not achieve this level of accomplishment. However, if it is good enough for the 'expert' we need to have a good reason to suggest that beginners might not aspire to it. It would help the beginners progress if he or she could develop the appropriate decision making, body movement and in the case of the roll, underwater orientation. So why not concentrate on this ? In this context an analysis of the mechanics of the pawlata roll or sculling for support do not seem particularly helpful.

What is helpful is the insistence, by Bunyan (1992) and Wardle (1991) that to develop good technique the boat should be fitted out for the kayaker. How many teachers have their own boat fitting like a glove, when their (usually smaller) students are rattling around inside the fleet boats ? We are still awaiting a manufacturer who will properly address this problem for the instructional boats market.

With a boat that fits and a teacher prepared to help in the discovery of skills appropriate to a wide range of circumstances, rather than concentrate on performance, the student becomes free to learn. In the case of a complex skill such as a kayak roll, no-one can really expect to formalise the learning of it, or be there every time the skill is used. All we can hope to do is encourage the student and accelerate the process of discovery.

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Author's Notes

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