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Revisiting the Metaphorical Concept of “No Strokes First - All Strokes First”: Part One - Beginning Strokes

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Revisiting the Metaphorical Concept of “No Strokes First - All Strokes First”: Part One - Beginning Strokes

Cover Page Footnote

The videos presented here were produced by by second author, Mr. Alex Mwaipasi, of the Tanzanian Lifesaving Society and are included with his kind permission. Thank you, Silvia Raphael Caroiolo for the excellent demonstrations. The videos were embedded in the text by Mr. Ebbe Laakso Horneman.

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Abstract

The aim of this article is to address the familiar question “Which swimming stroke should be taught first?” The discussion is usually focused on breaststroke versus crawl. Provoked by these naïve discussions of which stroke should be taught first (as if stroking equals swimming, which it emphatically does NOT), the question was answered metaphorically in an earlier article “No Stroke First – All Strokes First” (Stallman, 2008a). Here in Part I we identify and describe six strokes, all of which might be a candidate for any learners ‘very first’ stroke. We describe them as beginning strokes. Having identified and learned which one that a learner finds to be their easiest, the learner should then acquire the others. This strategy not only places the learner’s easiest stroke first but adds the other “beginning strokes” and launches an all-around foundation upon which all other strokes can more easily be learned.

Keywords: swimming, learn-to-swim, swimming strokes, human stroke, water competence

The official toll of death by drowning is estimated as 320,000 per year (WHO, 2020). Most experts, however, believe it could be 2-3 times greater (Peden, 2008) (i.e., perhaps over one million – more than the number who die from HIV-related causes) (WHO, 2020). Teaching people to be competent and to behave safely in, on, and around the water and to interact safely *with* the water is well recognized as a major part of drowning prevention (WHO, 2017). The need for all-around development of one’s aquatic movement repertoire already at the beginning level, and exploring the essential beginning strokes, is the subject of the following pages. In a subsequent article (Part Two: Which Strokes Come Later?) we explore the continuation of this all-around development at the intermediate and advanced level.

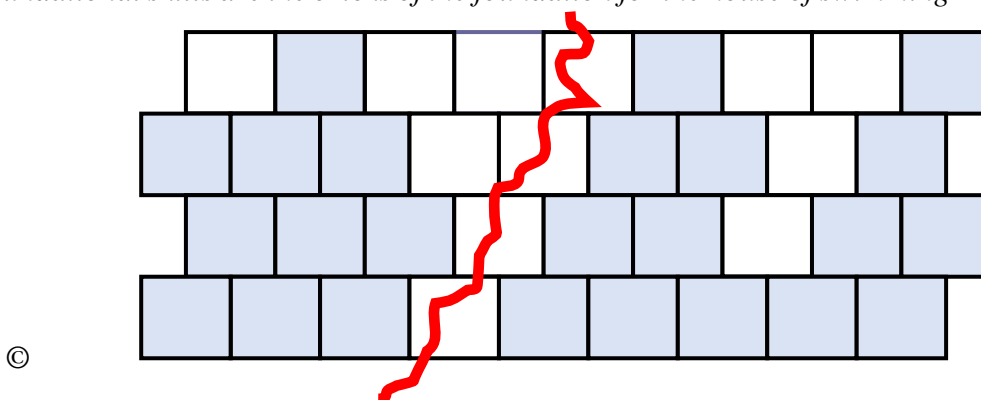
No Stroke First

The reader is referred to the editorials described above in which the argument is metaphorically made for “*No Stroke First*” (Stallman, 2008; 2014a). Lest the wrong impression is given by focusing on propulsion as accomplished by various strokes in this article, we repeat that propulsion (i.e., strokes - any stroke) must come later in the learning process. Foundational motor competencies must come before any stroke (Smith, 1971; Langendorfer & Bruya, 1995, Langendorfer, 2013), and *no stroke* is the correct “first stroke” for all (Stallman, 2014c). A firm foundation must be first laid to support this final phase of the learn-to-swim process: learning propulsive movements. Avoiding, forgetting, not understanding these foundational skills and the role of this foundation as the most important part of the process of learning to swim may be the greatest and the most common mistake made by inexperienced teachers (Smith, 1971, Stallman, 2019).

Consider the analogy of building the foundation of a house (Stallman and Vikander, 2018). The first row of bricks defines the final building. It consists of many bricks, each being an essential “part of the whole.” If any of these bricks is missing, that first row is weakened. We create “weak links” (see Figure 1). If we begin the second row with missing bricks in the first row, it also weakens the second row. The second row can only be as strong as the first.

Figure 1.

Foundational skills are the bricks of the foundation for the house of swimming



If, for example, the first row of bricks represents “breath control”, as the foundation grows the weaknesses accumulate and become magnified. The second row might represent “buoyancy control”. The control of our natural buoyancy is dependent on breath control (Lanoue, 1963; ARC, 1961). That means that the strength of the second row is *dependent* on the strength of the first row. And so on as the wall grows higher. The pressure increases. Any weakness below weakens the entire structure. A fault line develops. The wall collapses! An emergency episode ensues! If we see these missing bricks and fill in the holes, the wall will rise, strong and true. The top row of bricks might represent propulsion skills. It comes last. On this firm foundation we can build a fine house! Likewise, we can build strong and efficient swimming with strong and efficient strokes (among other essential skills).

Brenner, Moran, Stallman, Gilchrist and McVann (2006) reminded us that while psychomotor competence (skill) is an important part of water competence, it is only a part, and often not enough to prevent drowning (see Figure 2). We ought to think of skill as the core only because it is usually the entry point where we meet new learners. This in no way suggests that it is more important. While they may come to us to learn these motor competencies, once these learners come to us, it is our responsibility to provide the full package of water competence that include cognitive, affective, and psychomotor competencies (Stallman, Moran, Quan, Langendorfer, 2017).

Figure 2

Skill is only one element of water competence

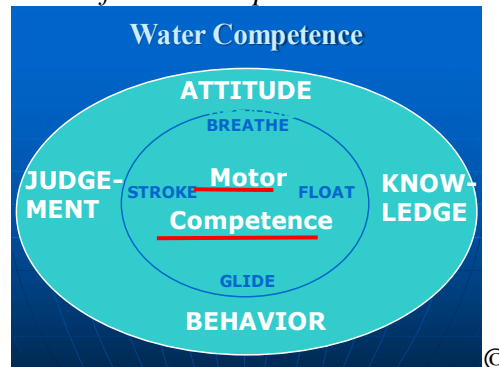


Figure 3

Stroking is only one element of aquatic skills



And when we examine these “psycho-motor competencies” (Fig. 3) we see that propulsion or stroking is only a part. The importance of these foundational skills upon which strokes can be built and with which we can combat aquatic emergencies was again emphasized with the review study of Stallman et al. (2017). We have entered a transition period in this last decade. The focus is now on “competence” rather than “skill”. Butler (1978) defined ‘competence’ as a cluster concept of skills, attitudes, and knowledge - linking it to education. The primary reason for this is the need to strengthen the idea that drowning prevention requires the integration of the psychomotor, affective and cognitive competencies, all of which are equally important. All these competencies (see Table 1) are considered foundational and have been shown by research evidence to possess protective value. They are building blocks upon which further development is based.

While the “beginning strokes” (the focus of this paper) are real strokes, we consider them also to be foundational motor competencies. Water competence # 5 (i.e., swimming on both front and back) starts with the beginning strokes described here. Now that we have placed stroking in its correct place, let’s return specifically to propulsion (i.e., moving through the water).

Table 1*The essential water competencies (from Stallman et al., 2017)*

Water competencies			
1	Safe entry Entry into water Surface and level off	9	Clothed water competencies
2	Breath control: Integrated and effective breathing	10	Open water competencies
3	Stationary surface competencies Buoyancy control: Floating Treading water	11	Knowledge of local hazards
4	Water orientation competencies a) Roll from front to back, back to front b) Turn, L & R, on Front & Back	12	Coping with risk - awareness, assessment, and avoidance
5	Swimming competencies a) Swim on the front b) Swim on the back	13	Assess personal competency
6	Underwater competencies a) Surface dive b) Swim underwater	14	Recognize/assist a drowning person
7	Safe exit	15	Water Safety Attitudes & values
8	Use of personal flotation devices (PFDs)		

All Strokes First

Here the metaphor “All Strokes First” is explained, the primary aim of this article. Strokes will be “recognized” that many do not recognize. The idea that swimming is more than what is done with the arms and the legs and that water competence is more than swimming skill has been defended elsewhere (Brenner, et al., 2006, Langendorfer, 2011, Stallman, et al., 2008b, 2017). Within the realm of *beginning* swimming motor competence, there are a number of strokes which have unique protective value and should be learned/taught (ARC, 1961, Armbruster, Allen and Billingsly, 1968, Torney and Clayton, 1981).

The comments and descriptions presented here are aimed at the learner who is first learning these skills, and you, the teacher. Our primary aim is to demonstrate the unique value of each of these beginner strokes and the need for its’ inclusion. We argue that all of the following four strokes should be learned although only one will be chosen by each learner as their very first.

Beginning Strokes – The Pedagogically Unique “First Strokes”

These strokes are referred to here as pedagogically unique only to suggest that they are less frequently taught in spite of their obvious pedagogical value. In some quarters they have been misunderstood or even forgotten. They are frequently denigrated as unofficial or non-traditional, not recognized. However, they *are recognized* and they *are traditional* in many cultures and have been with us for a long time, serving us well (Andrews, 1889, Sinclair and Henry, 1893, Thomas, R., 1904, Kiefer, Gabrielsen and Gabrielsen, 1951, Brown, 1953, ARC, 1961). They offer the simplest choices when searching for the best option for a “first stroke”, for each learner (Stallman, 2014a). Langendorfer and Bruya (1995) and Langendorfer, (2013, 2015) remind us that children normally learn several things at the same time, including swimming strokes – and that we can use this to the advantage of the learner (and the teacher). Historically, these strokes surely represent the forerunners of more modern strokes (Sinclair and Henry, 1893, Dalton, D., 1899, Thomas, 1904, Armbruster et al, 1968,). They are also probably the simplest to learn. They resemble the same steps small children go through in their aquatic developmental stages (McGraw, 1939, Erbaugh, 1978, Langendorfer, 1987, Langendorfer and Bruya, 1995).

The strokes we describe in this article are in fact, a combination of the natural development of the rudimentary aquatic movements of children with the evolution of movement when aided by learning/teaching. Langendorfer and Bruya, (1995) call this “motor sequences in prescriptive teaching”. This is especially relevant when adopting a developmental teaching approach and using developmental assessment of each learner’s current level of achievement (Robertson, 1993, Langendorfer and Bruya, 1995). This evolution of movement behavior (with or without teaching) takes time (Robertson, 1993, Langendorfer and Bruya, 1995). A learner can only learn what their developmental level allows. For example, the “dog paddle” evolves to the human stroke which then evolves to a beginner crawl stroke, *over time* (Langendorfer and Bruya, 1995). The learner will remain at the previous stage until they are developmentally capable of the next stage. While we cannot expect this human stroke swimmer to reproduce the movements of the developmentally more advanced learner, they are still capable of achieving physiologically economic movement (enhancing safety) for one *at their level of development*.

We remind the reader that “advanced” levels of motor development can occur early and that remarkable achievements have been performed by the surprisingly young. Toddlers sometimes exhibit a natural egg beater kick or butterfly arm stroke. An example of physical but especially psychological stamina is the swimming of the English Channel by eleven year old Thomas Gregory in 1988 (Amos, 2016).

The following four (or more) strokes are *all* considered options as the very “*first stroke*” or “*style*”, i.e. “a combination of arms, legs, a specific

breathing pattern, and a specific coordination” (albeit, primitive). These have all been identified officially and used in many high-profile organizations (Brown, 1953, ARC, 1961, Boy Scouts of America, 1938, 1965, deBarbadillo and Murphy, 1972, Arnold and Freeman, 1972, Canadian Red Cross Society, 1977). The names most frequently used are “Beginning Stroke on the Front” and “Beginning Stroke on the Back”. For each of these there are at least two choices. Among these, any beginner should be able to find the one most suitable for them as their very “first stroke”. Not only will one of these be each learner’s “first”, but also, then mastering the other three (“All Strokes”) gives our learner a broad platform for both safety and for the learning of following strokes. We argue that each of these four (or more) has unique value as described below.

We repeat that *the learner will show the way* (Stallman, 2014c) i.e. letting each learner show us which next step is most appropriate for them. If we present some options more or less simultaneously, each learner finds their best option. Thus, we cater for the needs of all. No one is left waiting for what is most appropriate for them – at this point in time (Stallman, 2014c). The obvious advantage of each learner being encouraged to start with what is best for them is that *every* pupil gets a better start; *each* individual is more “*ready*” for one of these strokes than for the others (Langendorfer & Bruya, 1995). No one is left behind. Thus, they *all* experience early success, early mastery. This helps to create a mastery-oriented atmosphere (Roberts, 2007). This can be the point at which the learner “falls in love with the water” (if they haven’t already) and will eventually become a life – long learner (Robertson, 1993). They will become water competent. Then, even more water competent. They become increasingly less prone to a negative outcome in an emergency scenario.

The following beginning strokes are presented in no specific order, each learner’s needs will help them (and you) decide. Note that two options on the back are presented first. If the learner chooses one of these as their first, one might feel that being faithful to the principle of balanced progress as described elsewhere (Stallman, 2014b) would suggest that perhaps the next stroke should be on the front (or vice versa).

Beginning Stroke on the Back:

A developmental teaching approach here will recognize the rudimentary hand/arm movements usually called “finning” as (usually) a precursor to a more advanced “sculling” or “perhaps” even more advanced “elementary back” movement. This “progression” is referred to by Langendorfer and Bruya (1995) as *motor sequences*. This progression may take the form of motor developmental stages or the evolutionary stages of learning (with or without teaching) or both. When combined in the developmental teaching approach, we have “motor sequences in prescriptive teaching” (Langendorfer and Bruya, 1995).

The stroke described here combines the flutter (crawl) kick with a finning or sculling movement of the hands and underarms, at the hips (Kiphuth and Burke, 1950, Brown, 1953, Torney and Clayton, 1981, Thomas, 1989a, 1989b). A rudimentary breathing pattern of inhaling on the recovery of the hands (or the “out sweep” if sculling) and exhale on the push phase (or “in sweep”), is usually experienced as comfortable (Armbruster et al, 1968). The most critical aspects are comfortable and rhythmic breathing and relaxed movement. Progress is observed by visibly increasing relaxation, visible ease of rhythmic breathing (no breath holding – complete exhalation) and gradually increased distance per stroke (Craig and Pendergast, 1979, Stallman and Kjendlie, 2006). For some, sculling comes naturally and easily. For many, finning is easier, and comes first. The differences may be insufficient to call these two different strokes. Do so if you wish, if your pupils show the need. It increases the options.

Some prefer this finning movement using both hands simultaneously while others prefer using the hands alternately (Torney, 1950, Armbruster et al, 1968, Torney and Clayton, 1981). Also here, considering these as two different strokes gives us even more options, all of which are potential “first strokes”. Movement on the side (e.g., side float, side glide, side kick glide) should also be included among the foundational skills (Thomas, 1989a). Having laid the foundation, Norelius (1934) even suggested the side stroke as the very first stroke. We prefer to reserve the sidestroke for the intermediate learner.

Video 1

Beginning Stroke on the Back <https://youtu.be/kob3cRyGwUU>



The most advantageous aspect of this stroke is that for many, it is the easiest form of propulsion on the back, as well as easier than moving on the front (Brown, 1953, ARC, 1961, 1968, Smith, 1971, Thomas, 1989a). It can be life preserving for the learner who is at this level. While advancement will come quickly when this is performed comfortably, other alternatives are still beyond

this learner. With the back of the head in the water, it is easier to maintain a horizontal position than when on the front (ARC, 1968, deBarbadillo & Murphy, 1972) until such time as effective breathing on the front has been mastered. Since no body part is lifted above the surface, buoyancy is maximized. Also, it is easier to breathe on the back. As the first stroke on the back, no other stroke can replace it, until the learner has advanced beyond this stage. It also helps to form a foundation upon which a next step (see next stroke) can be easily achieved. It is an indisputable contribution to drowning prevention (USA Navy, 1944, Torney, 1950, Brown, 1953, ARC, 1961, 2014, Thomas, 1989a).

Beginning Elementary (Survival) Backstroke:

Developmental assessment (Robertson, 1993, Langendorfer and Bruya, 1995) will recognize this as a natural and easy step forward by gradually increasing the range of motion of the arm stroke, step by step, until the full arm stroke of the elementary back stroke is achieved. Brown, (1953) describes an intermediary phase as “winging”. Armbruster et al (1968) describe a similar intermediary arm stroke as “extended sculling” or “the resting backstroke” and suggest that it may help to keep the hips and torso at surface level. Kiputh, (1950) successfully employed this stroke as a first stroke for Yale University students over a period of many years. The crawl kick is retained. Some call this, Beginning Elementary Backstroke. Some learners will advance quickly from the above stroke to this one, with almost no demarcation, as if it were a single stroke. And some will develop this one so quickly that it is for all intents and purposes, their first. Others will experience this as something new and require a bit more time here and on the previous stroke. Emphasis in this process should be on raising the level of relaxation from the previous stroke, recovering the arms gradually further back, recovering the arms close into the body (touching on the way up/back, reducing resistance). Ongala calls this the “Tickle T” stroke (Ongala, 2012), emphasizing a recovery of the arms with the fingers touching (tickling) the body (See also Torney and Clayton, 1981). A pause is taken after the push phase of the arm movement. As the arm stroke increases in range, the gliding or pause phase should increase in duration, and the distance per stroke increases (Kiputh and Burke, 1950, Armbruster et al, 1968, Stallman and Kjendlie, 2006). The full arm stroke should reach approximately the level of the top of the head, more like a Y position than a T. As the arm stroke improves its’ economy of movement, the kick should be de-emphasized, giving the arms the primary responsibility for propulsion (if this has not already been naturally achieved).

Video 2

Beginning Elementary Backstroke <https://youtu.be/X7JvIFo-4FQ>



As above, this may be the most effective movement pattern on the back, for a learner at this stage of development. This stroke may be the first experience with what some call a “resting” stroke (i.e., emphasis on a long glide phase, resting in the glide) (USA Navy, 1944, ARC, 1961, Armbruster et al, 1968, Thomas, 1989a). Some call this stroke (as well as the final form of elementary backstroke), “survival back stroke” (ARC, 1968, McElroy, 1986, Thomas, 1989a). Part of the effectiveness of this stroke is the underwater arm recovery, which maximizes buoyancy. This may give a continuously slightly higher position in the water, perhaps making breathing even easier. Although the recovery underwater increases resistance, speed may not be the goal in an emergency scenario (Choi et al., 2000). At this stage of learning, breathing should be very relaxed and rhythmic. A comfortable breathing pattern for most is “in” on the recovery of the arms and “out” on the push phase. We see that this stroke may somehow “lead” to another (the elementary backstroke). Although here the kick is continuous, as it is de-emphasized the arms contributing most of the propulsion, the resting phase becomes a real rest.

Beginning Stroke on the Front (The Human Stroke)

The human stroke of today combines the flutter kick and a crawl like arm stroke with an underwater recovery. It is *NOT* the Dog Paddle (Brown, 1953, ARC, 1961, Thomas, 1989a, 1989b). Some aquatic educators and motor learning specialists consider the dog paddle to be a natural phase in the aquatic movement development of children (McGraw, 1939, Erbaugh, 1978, Langendorfer, 1987). Some object to teaching stroking before the mastery of putting the face in the water, thus allowing the “dog paddle” to evolve naturally but not consciously teaching it. If one considers the natural evolution of movement as developmental changes (Langendorfer and Bruya, 1995), the dog paddle would come first (McGraw, 1939, Erbaugh, 1978, Langendorfer, 1987), then evolving to a human

stroke and eventually to a beginning crawl. Whether one systematically “teaches” the dog paddle first or chooses to allow this to evolve naturally and then begins the teaching sequence with a head down human stroke, remains a topic of discussion. We do **not** recommend *teaching* the “dog paddle”. The distinguishing feature of this human stroke is that the head is down, and as the learner progresses, rotary breathing is introduced. The arm stroke has the beginnings of recognizable pull and push phases (ARC, 1938, 1961, Thomas, 1989a). As the learner progresses, it becomes progressively more like the complete crawl stroke with the exception of the underwater recovery (Langendorfer and Bruya, 1995). Emphasis should be placed on gradually increasing the length of the stroke, both forward to the catch and backward to the finish. Breathing should be monitored, to ensure optimal inhalation (according to need) and complete exhalation underwater.

Video 3

Beginning Stroke on the Front: The “Human Stroke”

<https://youtu.be/OzfeLDifItQ>



This stroke is unique in that it permits an easy line of sight forward (e.g. towards a safe haven), though not as easy as the following stroke (Stroke Nr. 4, Alternate Beginning Stroke on the Front). The underwater recovery maximizes buoyancy, often making the learning of rotary breathing easier (ARC, 1938, Brown, 1953, ARC, 1961, Thomas, 1989a). Some find balance easier to maintain. Finally, it combines a diagonal movement of the arms and the legs (for some, easier to coordinate), also making the introduction of rolling about the longitudinal axis of the body easier (Thomas, 1989a, 1989b). Expert opinion suggests that the human stroke is often an effective step in learning the crawl (Brown, 1953, ARC, 1961, 1968, deBarbadillo & Murphy, 1972, Langendorfer & Bruya, 1995; Thomas, 1989b). This or the following option should satisfy the needs of virtually every learner as the easiest possible stroke on the front, unique – and their first!

Alternate Beginning Stroke on the Front

This stroke combines the crawl kick with a symmetrical breaststroke like arm stroke (Brown, 1953, Canadian Red Cross Society, 1977, Langendorfer and Bruya, 1995, Stallman, 2014c). Breathing can be forward as in breaststroke or to the side as in crawl. Breathing should visibly show that it is comfortable, that it is visibly rhythmic, that full exhalation is performed underwater, that it neither detracts from limb movement nor disturbs body position (Thomas, 1989a). Some will consider the combination of a diagonal leg action with a symmetric arm action as inappropriate. However, we have already seen this on the back. Extensive experience and expert opinion suggest that when learners are allowed to choose between these two described arm strokes, many choose this combination and are in no way hindered in their progress nor in the performance of economical movement (Stallman, 2014c).

Video 4

Alternate Beginning Stroke on the Front <https://youtu.be/UNxXw7bHgDo>



A unique aspect of this stroke is that it is the learner's choice between two suggested beginning strokes on the Front (Canadian Red Cross Society, 1977; Langendorfer & Bruya, 1995; Stallman, 2014c). Being the learner's choice, there will be greater motivation and easier achievement (Roberts, 2007). Progress will be more natural. If one adopts forward breathing (as in breaststroke) a clear forward view is easily obtained on every breath. Assimilating this arm stroke might also be a steppingstone in learning the breaststroke at a later stage. The choice itself and the ease of learning attest to the fact that this is the easiest option on the front for those learners who choose it, at this stage in their development (Roberts, 2007, Stallman, 2014c). For some, this will be their first stroke. Herein lies its' unique survival value.

After negotiating the above options, we need to ensure that the learner has at least one comfortable stroke on both the front and the back (preferably all

four of the above) and the beginnings of movement on the side. It has been widely accepted that as early as possible, we need to strive for roughly equal proficiency on front, back and side (ARC, 1937, 1961, Stallman et al, 2008, Stallman, 2014b). This “balanced progress” is described elsewhere as a “principle” of water competence (Armbruster et al, 1968, Stallman, et al, 2008, Stallman, 2014b) and can be traced back historically well over a century (Dalton, D., 1899, Corsan, 1910, Dalton, F., 1931, Armbruster et al, 1968). This relationship should be maintained as progress moves to an increasing repertoire of skills (ARC, 1937). Assimilating all four (or more) of the beginning strokes described above increases the breadth of the repertoire (thus increasing the arsenal of possible solutions to any possible future challenge of risk). It also strengthens the foundation for further progress as each of the four offers a natural progression for learning one or more of the following strokes. We need also to continue to monitor breath control. The ability to inhale on demand, and only according to need, as well as to exhale completely under water, is imperative. Economic breathing opens the door to economic movement (ARC, 1961, Lanoue, 1963, Armbruster et al, 1968).

Summary

Each of the four strokes described and pictured above is a candidate for *each* learner’s “first stroke.” Given the dramatic differences between learners, any one of these might serve best as the first for any given learner. In the context of group learning, the teacher will need to present several of these simultaneously thus allowing *each* learner to choose. While this will surely keep the teacher busy, it will improve learning by allowing each learner to proceed according to their own needs (Roberts, 2007).

We have pictured four strokes above. If we examine Fig. 4, Beginning Swimming on the Back, we see that the hand/arm action might be either finning or sculling. This gives us another stroke. We also see that when finning, the learner may use the hands simultaneously or alternately. Again, another stroke. We now have six strokes which are a possible “first”.

Once the best “first stroke” has been identified for each learner this will promote learning and the accompanying motivation derived from a better start. To proceed, we recommend that each learner should reach a reasonable level on their first stroke before going back to the strokes they have *not* chosen. Learning all of these primary beginning strokes opens the way for the more sophisticated strokes which will be presented in a future article.

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