

## **SWIMMER DEVELOPMENT MODEL**

[Dr Ralph Richards]

I am continually questioned by parents regarding suitable training parameters for individuals and groups of young swimmers. What should be the focus of training; how many sessions are appropriate; and how many weeks per year should young swimmers train?

Whilst there are no 'right' or 'wrong' answers and no single formula applies in all cases, there are a number of recommendations that should be taken into account. During the years I served as National Coaching and Development Co-ordinator for Australian Swimming Inc. a "Multi-Year Age-Group Development Model" was developed to offer some guidance for parents and coaches regarding difficult training decisions.

Prior to puberty the paramount objectives of any program should be to instill a love of the sport, teach quality technique, and develop all-around skill. Training programs must be well thought-out and have goals that include high level skill development as well as an adequate emphasis on physical conditioning.

Questions regarding volume and intensity of training and type/number of competitions during childhood are complex issues. Both over-exposure and under-exposure to these variables may detract from achieving one's full potential. Age-group competitive swimming should be seen as a means to an end (i.e. long term participation in sport), not an end in itself. Careful attention must be given to individual needs and motivations, as well as the conditions that affect sporting development.

The composition of major Australian Swimming Teams (i.e. Olympics, World Championships, Commonwealth Games) in recent years has reflected the trend toward older, mature competitors staying in the sport. This highlights the need for long-term strategies for swimmer development. Peak performance is the result of many factors; including long-term skill development (both technical and psychological skills), maturity, and the optimum development of physiological capacities.

It's part of our cultural heritage for children to be exposed to a range of aquatic experiences at a fairly young age. The formal process of learn-to-swim instruction provides the basis for life-long skills and confidence in and around the water. There may be several years of "learning" or consolidation of basic aquatic movement skills before any type of "training" commences. Training is a term that is hard to define during early childhood because the learning process itself relies upon repeated practice. However, training generally involves these broad based performance objectives: (1) the acquisition of complex skills (i.e. such as tumble turns and racing start) that are specific to competition, rather than required for safety or recreational pursuits, (2) improvement in physical capacities that allow sustained swimming, and (3) improvement in technical capabilities that allow more efficient propulsion in the

water. Naturally, the achievement of these objectives means that a swimmer is able to move further, faster, and more skillfully.

All models for sporting development should embrace the principles of childhood growth and development. It's important to understand that skills and physiological capacities acquired while young will impact upon later stages of development. For example, stroke technique is much harder to modify after many years of application. Endurance and strength develop steadily during childhood; therefore, the physical demands of training should increase in a logical manner.

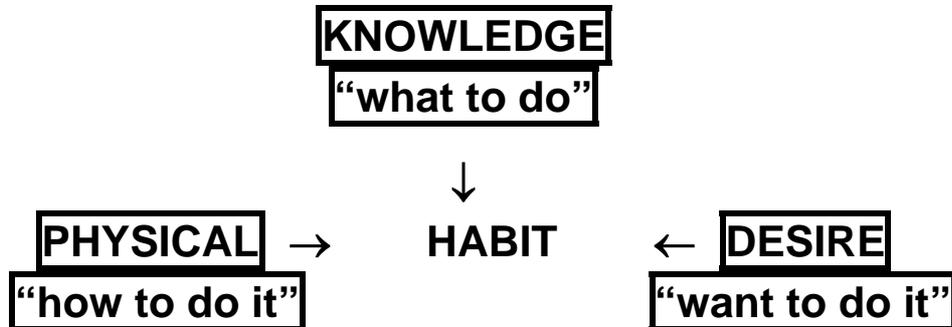
It's also true that every child will mature at a slightly different rate. Child development research gives us normative information on the likely chronological age at which certain abilities are acquired. However, any two 10 year-old swimmers may be 1-2 years apart in their biological ages. Research also suggests that physical training itself impacts on some aspects of biological maturation. These points are made to emphasise the fact that variation between individuals is a consideration when evaluating the effectiveness of a training program. What is a realistic training progression for an age-group swimmer?

Four basic periods of age-group swimmer development have been identified based upon a number of important considerations (e.g. biological maturity, progressive skill development, emotional and social maturity, etc.). The training program at each stage targets certain objectives that are compatible with most swimmers' readiness and ability to achieve. Squad organisation and the application of training methods also reflect these objectives. Constant monitoring of an individual's progress will determine if adaptation to the current training program is on track.

For example, a late maturing 12 year old girl might best fit into the training plans developed for a group of mostly 10-11 year-olds. Conversely, the 12 year old girl who has completed her growth spurt may be capable of meeting the training expectations of a more advanced training level. Individual swimmers often demonstrate mastery of a few advanced objectives; however, until they have mastered all (or nearly all) the objectives at their current training level they are not ready to undertake a more advanced program.

Three important concepts should be noted. First, each training period will have a major emphasis. Second, it's important that both mastery and retention of lower level skills and fitness are carried forward to the next training period. Third, training generally progresses by first increasing the volume of work, then the frequency of training sessions, and finally the intensity of training.

## SKILL DEVELOPMENT



- ◆ good technique = high efficiency
- ◆ it's important to know the difference between technique and style
- ◆ complex skills are often broken down into simplified techniques
- ◆ skills develop from 'learning' to 'performance with speed' to 'performance with speed, under pressure'
- ◆ the underlying level of physical preparation impacts on skill acquisition
- ◆ motor development and the complexity of a skill will affect learning

## **PSYCHOLOGICAL DEVELOPMENT**

- ◆ **maintaining motivation requires developing psychological skills within the context of the swimmer's rationale for participation**
- ◆ **age-group swimmers are not "little senior swimmers" and senior swimmers are not "bigger age-group swimmers"**
- ◆ **success encourages high self-esteem**
- ◆ **positive reinforcement instills a sense of success**
- ◆ **the transition from age-group to senior swimming is psychological as well as physiological**
- ◆ **psychological skills should improve with training and practice**
- ◆ **the emotional state of children may be unpredictable and change very quickly**

## **PHYSICAL DEVELOPMENT**

- ◆ **success prior to the age of 16 is closely related to biological development / success at the senior elite level is the result of many factors**
- ◆ **late or average-age maturing swimmers tend to stay in the sport longer**
- ◆ **sporting preparation that coincides with the developmental stages will result in better long-term improvements**
- ◆ **prior to the age of 12 the energy system which is developing most rapidly is the "aerobic system"**
- ◆ **endurance based training may be the single most important component of success throughout the career of an athlete**
- ◆ **capacities for effort (i.e. energy systems) and physical & psychological recovery must be developed concurrently for long-term success**
- ◆ **physical preparation is a major prerequisite for skill development**



## MULTI-YEAR AGE-GROUP SWIMMER DEVELOPMENT MODEL

Age	8 ± 1 year		10 ± 2 years		Girls 12 / Boys 13 ± 1 year		14 ± 2 years	
Training Period	2 years		2 years		2 - 3 years		3 - 5 years	
Training Time Per Week	Pool	Land	Pool	Land	Pool	Land	Pool	Land
	2-4 Sessions 40 min - 1 hr	1-2 Sessions 15-25 min	3-5 Sessions 1 - 1 1/4 hr	2 Sessions 20-30 min	4-6 Sessions 1 1/4 - 1 1/2 hr	2-3 Sessions 30-45 min	6-10 Sessions 1 1/2 - 2 hr	2-3 Sessions 45 min - 1 hr
Volume / Session	0.75 - 2 Km.		2 - 3.5 Km.		3.5 - 6 Km.*		4 - 8 Km.*	
Yearly Training Volume (Pool)	24 - 30 Weeks 75 - 250 Km.		30 - 36 Weeks 250 - 500 Km.		36 - 44 Weeks 500 - 1000 Kms.		40 - 46 Weeks 1000 - 2500 Kms.	
Training Objectives Program	<ul style="list-style-type: none"> <li>* Technique all strokes</li> <li>* Racing Skills starts, turns, pace</li> <li>* Aerobic Endurance</li> <li>* Sculling Drills</li> <li>* Speed at 25-50m</li> <li>* Simple Training Sets and Games</li> </ul>	<ul style="list-style-type: none"> <li>* Flexibility</li> <li>* General Body Strength</li> <li>* Movement Co-ordination</li> <li>* Group Activities</li> </ul>	<ul style="list-style-type: none"> <li>* Technique</li> <li>* Racing Skills</li> <li>* Aerobic Endurance</li> <li>* Speed (&lt; 50m) &amp; Acceleration</li> <li>* Greater mix of Training Methods</li> </ul>	<ul style="list-style-type: none"> <li>* Increase Strength to Body Weight Ratio</li> <li>* Even Development of all muscle groups</li> <li>* Flexibility</li> <li>* Improve 'core' body strength</li> </ul>	<ul style="list-style-type: none"> <li>* Technique</li> <li>* Increase Training Volume</li> <li>* Racing Skills</li> <li>* Speed (&lt; 50m) &amp; Acceleration</li> <li>* Introduce some Intense Interval Training</li> </ul>	<ul style="list-style-type: none"> <li>* Musculo-Skeletal Assessment</li> <li>* Body Weight Exercises &amp; Simple Gym Equipment</li> <li>* Flexibility &amp; Body Strength</li> </ul>	<ul style="list-style-type: none"> <li>* Increase Volume and Intensity of Training</li> <li>* Integrated Training Model</li> <li>* Begin to Specialise</li> <li>* Perfect Technique &amp; Skills</li> </ul>	<ul style="list-style-type: none"> <li>* Periodize Strength</li> <li>* Transfer Power into Swimming Performance</li> <li>* Cross Training Activities</li> <li>* Maintain Flexibility</li> </ul>
Motor Learning Objectives	<ol style="list-style-type: none"> <li>1. Develop a feel for the water, the ability to make corrections in movement patterns.</li> <li>2. Learn the technical skills of all four strokes.</li> <li>3. Develop general body co-ordination and strength.</li> <li>4. Learn good habits for maintaining and improving natural flexibility.</li> <li>5. Learn to maintain correct technique on longer (submaximal) swims.</li> <li>6. Learn to maintain correct technique on short sprints.</li> </ol>		<ol style="list-style-type: none"> <li>1. Improve stroke technique and learn race skills (such as turns, starts, pacing, and acceleration).</li> <li>2. Consolidate stroke development.</li> <li>3. Improve conditioning components of endurance and speed while maintaining stroke technique.</li> <li>4. Develop simple race strategy and tactics.</li> </ol>		<ol style="list-style-type: none"> <li>1. Maintain efficient technique as body proportions change.</li> <li>2. Accommodate increases in muscle strength to improve swimming efficiency.</li> <li>3. Retain diversity of performance goals (compete in various stroke events and distances).</li> <li>4. Improve both steady pace and sprint performance using ideal stroke technique (all strokes).</li> </ol>		<ol style="list-style-type: none"> <li>1. Adapt to diverse training methods.</li> <li>2. Refine stroke technique during all speeds &amp; intensity of swimming.</li> <li>3. Apply strength and power to swimming performance.</li> <li>4. Specialise in strokes and competition distances.</li> <li>5. Retain range of motion and muscular co-ordination at all swimming speeds.</li> <li>6. Refine race skills (starts &amp; turns, tactics, pace, etc.).</li> <li>7. Learn to taper for peak performance.</li> </ol>	

	[age 8 ± 1 year]	[age 10 ± 2 years]	[age 12 / 13 ± 1 year]	[age 14 ± 2 years]
<b>Knowledge &amp; Attitudes</b>	<ol style="list-style-type: none"> <li>1. Enjoyment of pool and land based activities.</li> <li>2. Learn to function as an individual within a group activity.</li> <li>3. Become familiar with rules and competitive situations.</li> <li>4. Learn about stroke technique and training methods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Enjoyment of pool and land based activities.</li> <li>2. Become part of the club, team, squad culture.</li> <li>3. Develop habits which support an active, healthy lifestyle.</li> <li>4. Begin to function with less direct supervision and make positive decisions regarding training compliance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Enjoyment of swimming activities and desire for personal improvement.</li> <li>2. Broader knowledge of training methods and the resulting performance outcomes.</li> <li>3. Improved personal management skills (balancing training, school and social objectives).</li> <li>4. Develop self-discipline and increasing commitment to swimming.</li> </ol>	<ol style="list-style-type: none"> <li>1. Enjoyment of the process (i.e. goal setting) and product (i.e. attainment of results) of sports participation and competition.</li> <li>2. Understand and practice performance management skills, such as good nutrition, recovery techniques, mental skills, etc.</li> <li>3. Independence (i.e. working with a coach and support personnel, but taking responsibility for self).</li> <li>4. Improved personal skills (including education &amp; vocational objectives).</li> </ol>
<b>Competition Objectives</b>	Have fun and learn to participate without anxiety or distraction. Personal improvement (in both performance and skill) and enjoyment should be recognised and reinforced.	Club level competitions leading up to State competitions (i.e. school or age-group). Skill development, improvement, and number of events swum are the most important goals.	Club and State level competition group). Performance goals should be evaluated regularly, as they apply to both training and competition. Each race opportunity is used as a learning experience.	State and National 'age-group' goals. Competition in 'open' events as ability improves. Selection of events begins to focus on stroke and distance. Race strategies and mental skills are perfected.

**[\* During some developmental stages girls will be capable of handling a greater volume of training than boys, due to an advanced rate of maturation.]**