



# Framework Training Plan

2020–2028

*swiss aquatics*   
*swimming*

# Foreword

Dear swimming friends,

With this document, I am pleased to provide you with our Swiss Aquatics Swimming Framework Training Plan (FTP) for the next two Olympic cycles until 2028. The elaboration was carried out primarily in a Swiss Aquatics Swimming core team, so I would like to thank my colleagues Nadine Bronner-Grandjean, David Burkhardt and Dr. Dennis Born for their cooperation and support. In addition, we were supported by numerous club coaches and external experts, especially from the federation's coach council, from the training science department of the Federal Office of Sport and from the federation support of Swiss Olympic. The translation into French was done by Ralph Schallon and the English translation was done by Elena Meisser. The layout was created by WORX Design GmbH. I would also like to thank them all very much. I hope the document will be actively used and provides a support for each reader.

I wish every user a lot of success!

Markus Buck  
Head of Elite Sport Swimming

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## THE IDEA BEHIND IT

The Swiss Aquatics Swimming FTP 2020–2028 is deliberately not a pages-long continuous text document. It is a compact, concise, understandable, useful and helpful tool for coaches, swimming school teachers, athletes, parents, officials, partners and sponsors. In terms of format, it is similar to a so-called "Playbook" from American football. Only a few pages are bound together. So that the document is always available at the pool edge!

The FTP provides a first basic orientation and is a quick reference guide. It is not an in-depth specialist literature – anyone who needs detailed information on specific topics cannot avoid studying scientific literature! Therefore, the most relevant works and helpful links are listed in the FTP.

The document supports coach education and provides a common thread. It does not replace the previous teaching and learning materials. The FTP replaces neither coach education, literature studies nor internships or even constant further education through training courses and the expert exchange!

## THE PHILOSOPHY OF THE FTP

The FTP is based on the FTEM Switzerland framework concept and brings together several classic Long Term Athlete Development concepts from successful nations (USA, CAN, NED, DEN, GER, ESP, BEL) in a new holistic approach.

Holistic in the sense that all players, institutions, partners and sponsors are integrated with their roles, tasks and challenges and so it becomes clear when, where and how the interaction and cooperation must take place! Of course, this should optimize the collaboration and increase efficiency and thus sporting success!

The FTP is a combination of presenting the current situation and projecting the desired ideal state! Contrary to the original FTEM concept from Australia, the FTP is embedded in an age-group structure. This is simply due to the reality of the school and competition system – that means: in our sport, the calendar age of an athlete cannot be ignored! At least as important is the gender-specific distinction in aspects that are affected by the different developmental biology!

## HOW TO UNDERSTAND THE FTP

### The columns represent the FTEM phases – for understanding:

The phases are based on the sports development level of the athlete, that is fundamentally independent of the calendar age and is determined by the level of biological development, individual prerequisites, training history, external conditions, etc. Nevertheless, in our FTP, it is shown linked to age groups that correlate on the statistical mean. Due to biological development, the calendar age at which a corresponding FTEM phase is reached can deviate from the shown mean by up to 4 years. However, this cannot be presented graphically in the selected form of representation.

### The lines contain the various FTP topics – for understanding:

Depending on whether the gender-specific biological development makes a significant difference, there are separate representations for men and women, or just the common representation. "Gender-specific" information is highlighted with the corresponding gender color.

In the case of the rough training indicators, "recommended minimum values" and "possible maximum volumes" were deliberately presented as a range.

Basically, we are convinced that the necessary – determined by the international performance development – improvement rate of an athlete per season and over several years should always be achieved with the minimum necessary training effort. "Minimal training effort required" implements optimal use of the sensitive phases of trainability to generate the basics for a long-term and successful career. So that the athlete has as long and as many development reserves as possible in order to increase the likelihood of being able to reach the top of the world! Of course, this is a constant process of trial and error and, depending on the athlete, may result in a linear training progression, or in a more volatile one.

There are nations in which the "possible maximum volumes" are realized as shown. Such volumes should only be provided if the athlete has the relevant prerequisites and can actually cope with these high loads. In addition, we want to clarify with the representation in the FTP what it means in terms of training volume to take this path – a long-term performance progression requires a long-term load progression! This must be guaranteed if this path is taken.

The training indicators are based on training for medium distances (200–400 m) and should be adjusted by varying the proportions of the individual training areas, for short (50–100 m) and/or long distances (800 m and longer).

Understandably, regional or local peculiarities could not be addressed. This FTP is and remains a schematic representation with all the associated advantages and disadvantages!

It is therefore up to the coaches and officials to adapt and break the Swiss Aquatics Swimming Framework Training Plan down, in the regions and clubs, to the local conditions.

In the end, the choice of strategy, methods and means is always up to the coach and the athlete!

FTEM		FOUNDATION					TALENT						ELITE				MASTERY				
Phase		F1a > F1b		F2		F3		T1		T2		T3		T4		E1		E2		M	
Description		Discover, acquire and basic movements		Apply and vary movements		Sport-specific engagement and/or competition		Demonstrate potential		Confirm potential		Train and achieve goals		Breakthrough and be rewarded		Represent Switzerland (international)		Have international success		Dominate sport	
Years of training		0		0		1		2		3		4		5		6		7		8	
Calendar age		From 3 to 6		From 4 to 7		8		9		10		11		12		13		14		15	
		Prepuberty					Puberty					Adolescence									
		PRESCHOOL AGE		PRIMARY SCHOOL AGE			SECONDARY SCHOOL AGE			HIGH SCHOOL AGE			COLLEGE AGE								
COMPETITION SYSTEM	♂	Growth phase																			
	♂	Categories																			
	♂	Licenses																			
	♂	Goal competitions																			
	♂	Swiss Aquatics – Swimming programs																			
	♂	Goal competitions																			
INSTITUTIONS	♂	Sponsorships																			
	♂	Swiss Aquatics – Swimming promotion squads																			
	♂	SOA (Talent) Cards → Funding institutions and programs																			
	♂	Swiss Aquatics – Swimming promotion squads																			
	♂	SOA (Talent) Cards → Funding institutions and programs																			
	COACHES	♂	Coaches education																		
♂		Coaches core tasks																			
♂		Optimum coach-swimmer ratio																			
♂		Parents core tasks																			
PARTNERS	♂	Partners core tasks																			
	♂	References																			



FTEM		FOUNDATION					TALENT						ELITE				MASTERY							
Phase		F1a > F1b Discover, acquire and basic movements		F2 Apply and vary movements		F3 Sport-specific engagement and/or competition		T1 Demonstrate potential		T2 Confirm potential		T3 Train and achieve goals		T4 Breakthrough and be rewarded		E1 Represent Switzerland (international)		E2 Have international success		M Dominate sport				
Description		0		1		2		3		4		5		6		7		8		9				
Years of training		0		1		2		3		4		5		6		7		8		9				
Calendar age		From 3 to 6		From 4 to 7		8		9		10		11		12		13		14		15				
		11		12		13		14		15		16		17		18		19+		16+				
TECHNIQUE GOALS ♂ ♀	Basic movement forms "Water"	Core competencies: Breathing, push off, floating, jumping Glide in streamline Flutter kicks			Start with diving "Dive and Glide" Paddle Rotate			Rhythm exercises Contrast exercises Combination forms Orientation exercises			Arm movement backwords +/- fist swimming Basic water polo techniques Basic "Diving" jumping exercises			Leg movement backwords			Entire movement backwords							...
	Freestyle	Basic form Flutter kicks Arm movement Breathing			Economize basic form ≤ 200 m Paddle exercises Rotation exercises			Improve basic form Make kicking effective Improve water position, head posture and stroke length			Develop fine form Arm pull – high elbow Smooth entire movement at all speeds			Improve FF – develop individual technique Arm pull – hand position, Ind. paddle and technique exercises			Stabilize FF Develop individual technique and condition			Variable availability Improve ind. technique Ind. TE exercises in comp. speed and long training sets + tactics		Individual technique Perfect individual technique Ind. TE exercises to comp. (speed) technique adapted to race tactics (stroke count, frequency, splits)		...
	Backstroke	Basic form Flutter kicks Arm movement			Economize basic form ≤ 200 m Paddle exercises Rotation exercises			Improve basic form Make kicking effective, breathing, Improve water position, head posture and stroke length			Develop fine form Arm pull – high elbow Smooth entire movement at all speeds			Improve FF – develop individual technique Arm pull – hand position, Ind. paddle and technique exercises			Stabilize FF Develop individual technique and condition			Variable availability Improve ind. technique Ind. TE exercises in comp. speed and long training sets + tactics		Individual technique Perfect individual technique Ind. TE exercises to comp. (speed) technique adapted to race tactics (number of strokes, frequency, splits)		...
	Breaststroke	Basic form Kicking Arm movement Breathing			Economize BF ≤ 100 m Paddle exercises uw pullout			Improve basic form Make kicking effective Improve water position, head posture and stroke length			Develop fine form Improve arm pull Improve timing Arms-legs-breathing			Improve FF – develop individual technique Undulation technique Optimize timing of entire movement			Ind. technique Hand position, Div. coordination forms, glide and hand position			Var. avail. – ind. technique Stable technique in longer training sets, ind. technique exercises in comp. speed + tactics		Individual technique Perfect individual technique Ind. TE exercises to comp. (speed) technique adapted to race tactics (number of strokes, frequency, splits)		...
	Butterfly	Basic form Kicking 1-arm movement Breathing			Economize BF ≤ 50 m Paddle exercises			Improve basic form Make kicking effective Improve water position, head posture and stroke length			Develop fine form Arm pull – high elbow Smooth entire movement at all speeds			Improve FF – develop individual technique Improve kicking in entire movement (rhythm) Arm pull – improve high elbow 1-/2-stroke breathing, improve water position			Ind. technique Coordination timing, elbow and hand position			Var. avail. – ind. technique Stable technique in longer training sets, ind. technique exercises in comp. speed + tactics		Individual technique Perfect individual technique Ind. TE exercises to comp. (speed) technique adapted to race tactics (number of strokes, frequency, splits)		...
	Underwater butterfly kicks	Basic form Dolphin movement Prone and back position 15 m after push off			Length of underwater phase in the competition 1 kick → 2 kicks → 3 kicks → Focus: increase steadily the number of kicks (= distance uw) with good technique!			4 kicks → 5 kicks →			5 meters → 7 meters → 9 meters → 10 meters → 13 meters → 15 meters Focus: cover constantly longer distances underwater at max. speed!						Length of underwater phase in the competition Individual optimal distance – goal: maximal speed		...					
	Start from the block	Header From pool edge Streamline Flutter kicks			Basic form Track- and grabstart Streamline with underwater butterfly kicks Breaststroke: uw pullout			Improve basic form Focus: Trackstart → Trackstart with –take-off leg learn to "dive into 1 hole"			Develop fine form Trackstart with –take-off leg learn to "dive into 1 hole"			Improve fine form Trackstart with –take-off leg Improve to "dive into 1 hole" and change direction			Stabilize FF Choose take-off leg			Variable availability Improvement of explosive take-off Video analysis of start phases		Individual technique Perfect individual start technique with video analysis of start phases (position, take-off, flight, entry, transition) Improvement of explosive take-off		...
	Backstroke start	Diverse jumps backwords			Basic form Underwater in streamline with flutter kicks Reaction games			Improve basic form Underwater in streamline with butterfly kicks			Develop fine form Starting position, start and jump from the pool stairs			Improve fine form Improve flight phase Improve to dive in backwards "dive into 1 hole"			Stabilize FF Improve transition			Variable availability Improvement of explosive take-off Video analysis of start phases		Individual technique Perfect individual start technique with video analysis of start phases (position, take-off, flight, entry, transition) Improvement of explosive take-off		...
	Freestyle flip turn	Roll forward Diverse turn drills around all body axes			Basic form Push off in streamline			Improve basic form Underwater in streamline with butterfly kicks			Develop fine form Improve turns with exercises around all body axes			Improve fine form Improve push off by foot position and knee angle Improve timing to the wall Vary distances			Stabilize FF Stab. ind. optimal timing			Variable availability Explosive push off improvement Video analysis of turn phases		Individual technique Perfect individual turn technique with video analysis of turn phases (swimming up, timing, turn, push off, transition) Improvement of explosive push off		...
	Backstroke flip turn (Backstroke and IM BA to BR)	Roll forward Diverse turn drills around all body axes			Basic form Push off in streamline			Improve basic form Underwater in streamline with butterfly kicks			Develop fine form Improve turns with exercises around all body axes			Improve fine form Improve push off by foot position and knee angle Improve timing to the wall Vary distances			Stabilize FF Stab. ind. optimal timing			Variable availability Explosive push off improvement Video analysis of turn phases		Individual technique Perfect individual turn technique with video analysis of turn phases (swimming up, timing, turn, push off, transition) Improvement of explosive push off		...
Tip turn (Butterfly, Breaststroke and IM BU to BA/BR to FR)	Smooth sequence Push off in streamline Diverse turn drills around all body axes			Basic form Breaststroke underwater pullout			Improve basic form Underwater in streamline with butterfly kicks or underwater pullout			Develop fine form Improve turns with exercises around all body axes			Improve fine form Improve push off by foot position and knee angle Improve timing to the wall Vary distance			Stabilize FF Stab. ind. optimal timing			Variable availability Explosive push off improvement Video analysis of turn phases		Individual technique Perfect individual turn technique with video analysis of turn phases (swimming up, timing, turn, push off, transition) Improvement of explosive push off		...	
Basic movement forms "dryland"	Core exercises Lying pull-ups Push-ups and dips Squats			Start and turn exercises "dryland" (reaction, jump, stretch and rotation exercises)			One-leg squat Run and jump ABC			Pull-up Strength training = Technique training on machines, barbell, etc.			Jump strength exercises for start/turn (squat jump, countermovement jump, long jump, one-leg long jump – with/without arm movements)			Jump strength exercises for start/turn with additional weight Swimming-specific strength training forms (swim bench)				...				
		Expand the coordination and strengthening exercises										Strength training basic exercises: bench press, lat pulldown, rowing, squat, deadlift												

FTEM		FOUNDATION					TALENT					ELITE					MASTERY	
Phase	F1a > F1b Discover, acquire and basic movements	F2 Apply and vary movements		F3 Sport-specific engagement and/or competition		T1 Demonstrate potential		T2 Confirm potential		T3 Train and achieve goals		T4 Breakthrough and be rewarded		E1 Represent Switzerland (international)		E2 Have international success		M Dominate sport
Description																		
Years of training	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16+
Calendar age	From 3 to 6	From 4 to 7	8	9	10	11	12	13	14	15	16	17	18	19+				
TRAINING INDICATORS "WATER"	Kilometer/year	-	≤ 96	176–370	497–778	864–1,843	1,210–2,419	2,304–2,880	≤ 3,038	≤ 3,136	Individual							
	Kilometer/week	-	2.4	4.2–8.4	10.8–16.2	18–38.4	25.2–50.4	48–60	≤ 62	≤ 64+	Individual							
	Kilometer/hour	-	1.2	1.4	1.8	2.4	2.8	3.0	3.1	3.2	Individual							
	"Regeneration"/week	-	-	14%/4–7 × ...	16%/4–7 × ...	24.5%/5–8 × ...	22.5%/6–9 × ...	23%/8–10 × ...	20.5%/10 × ...	21%/10 × ...	Individual							
	"Aerobic Capacity 1"/week	-	-	9.5%/1–2 × ...	8%/1 × 800–1,200 m	20%/2–4 × 1,800 m	22%/2–4 × 2,800 m	22%/3–4 × 3,200 m	20%/4 × 3,200 m	18%/4 × 3,200 m	Individual							
	"Aerobic Capacity 2"/week	-	-	-	4%/0.5 × 800–1,200 m	15%/1.5–3 × 1,600 m	18%/2–3 × 2,200 m	18%/3 × 2,800–3,200 m	20%/4 × 3,200 m	22%/4 × 3,600 m	Individual							
	"Aerobic Power"/week	-	-	-	-	-	15%/1 × 400–800 m	15%/1 × 600–1,000 m	15%/1 ⊕ × 800–1,200 m	15%/1 ⊕ × 1,000–1,500 m	Individual							
	"Anaerobic Capacity"/week	-	-	-	2%/1 × 200–300 m	2%/1 (+) × 300–600 m	2%/2 × 300–500 m	2%/2 × 500–600 m	2.5%/2 ⊕ × 600–800 m	2.5%/3 ⊕ × 500–800 m	Individual							
	"Anaerobic Power"/week	-	-	-	-	1%/1 × 200–400 m	1%/1 × 300–500 m	1%/2 × 200–300 m	1.5%/2 ⊕ × 300–400 m	1.5%/2 ⊕ × 400–600 m	Individual							
	"Sprint"/week	✓	2.5%/1 × 50 m	2.5%/1–2 × ...	2.5%/1–2 × ...	2.5%/2–3 × ...	2.5%/2–3 × ...	1.75%/3–4 × ...	1.75%/3–4 × ...	1.5%/3–4 × ...	Individual							
	Legs/week	✓	10%/1 × 200 m	10%/2 × 200–400 m	11%/2 × 600–900 m	12%/2 × 1,000–2,000 m	13%/3 × 1,200–2,000 m	14%/4 × 1,500–2,000 m	15%/5 × 1,800–2,000 m	15%/5 × 2,000 m	Individual							
	Arms/week	✓	2.5%/1 × 50 m	3.5%/1 × 150–300 m	5%/2 × 250–400 m	6%/2 × 500–1,000 m	7%/2 × 900–1,800 m	8%/3 × 1,200–1,600 m	8.5%/3 × 1,800 m	8.5%/4 × 1,500 m	Individual							
	Technique/week	✓	70%/2 × 800 m	48%/3–6 × ...	44%/4–7 × ...	12.5%/2–4 × ...	8%/2–4 × ...	7%/3–4 × ...	7%/4 × ...	7%/4 × ...	Individual							
	Coordination/week	✓	15%/2 × 200 m	12.5%/3–6 × ...	7.5%/4–6 × ...	4.5%/5–8 × ...	3%/4–8 × ...	1.75%/4–5 × ...	1.75%/5 × ...	1.5%/5 × ...	Individual							
Starts and turns/week	✓	1 × 15'	1 × 15'	2 × 15' (30')	2 × 20' (40')	3 × 15–20' (45–60')	3 × 20' (60')	3 × 20' (60')	3 × 20' (60')	3 × 20' (60')	Individual							
Learning goals	Water habituation, safety, hygiene	Ability to work in a team, competition rules, stroke count	Frequent training, swim with pauses, differentiate speed	Goal setting, sporting behavior, swim with send-off times, dose speed, propulsion	Time management, take heart rate, swim with target time, biology	Sports-appropriate nutrition, swim with target frequency and tactics, physics	Swim with combined targets (e.g. @V/F/TE), physiology, biomechanics	Financing (funding systems, sponsoring, etc.), travel/time and climate adaptation strategies, biochemistry	-	-								
Training equipment	Swimsuit, swimming goggles, swim cap, kickboard, fins, water bottle			+ Hand paddles (small)	+ Racing suit, zoomer, snorkel, band, specific comp. clothes, div. land training equipment (theraband, skipping rope, blackroll, etc.)	+ Hand paddles div. sizes (anti-mesh paddles), mesh socks, pulse sensor	+ Resistance pants (+/-pockets), StretchCordz®, parachutes (div. sizes), T-shirt, sponges, bucket, power rack, lead	Individual										
"Resistance training"	Minimal floating aids for technique training			Paddles for technique training (sensormotrics)	"Speed Assist Training" with StretchCordz® (green)	Arms/full stroke with paddles (+ fins/zoomer)	(Butterfly-)kicking/arms/full stroke with div. resistance equipment	Individual										
Altitude training	-	-	-	-	-	1 × per season (1 <sup>st</sup> MAC), in ≤ 2,000 m, for clarification "responder/non-responder" and general preparation	If "responder": ≤ 2 × per season, ≥ 2,000 m, 1 × for general preparation (1 <sup>st</sup> MAC & 1 × spec. preparation (2 <sup>nd</sup> /3 <sup>rd</sup> MAC)	"responder": ≤ 3 × per season (altitude training cascade), ≥ 2,000 m, for general and spec. preparation	"responder": ≤ 4 × per season (altitude training cascade), ≥ 2,500 m, for general, spec. and immediate preparation	Individual								
TRAINING INDICATORS "DRYLAND"	Training session dryland/week	-	4 × 15'	6 × 15'	7 × 20'	8 × 20'	8 × 20'	8 × 20–30'	9 × 20–30'	9 × 20–30'+	Individual							
	Flexibility/week	2 × 15' general flexibility		3 × 15' specific flexibility	3 × 20' specific flexibility	3 × 20' maintain flexibility	3 × 20' maintain flexibility	3 × 20' maintain flexibility	3 × 20' maintain flexibility	3 × 20' maintain flexibility	Individual							
	"Core"/week	1 × 15' simple warm-up exercises		2 × 15' +BW, MB, SB	2 × 20' +BW, MB, SB	3 × 20' +BW, MB, SB	3 × 20' +BW, MB, SB	3 × 30' +BW, MB, SB	3 × 30' +BW, MB, SB	3 × 30' +BW, MB, SB	Individual							
	Shoulder prevention/week	1 × 15' simple warm-up exercises		1 × 15' +BW, MB, SB	2 × 20' +BW, MB, SB	2 × 20' +BW, MB, SB	2 × 20' +BW, MB, SB	2 × 30' +BW, MB, SB	3 × 30' +BW, MB, SB	3 × 30' +BW, MB, SB	Individual							
	Training session polysport/week	120' general	180' general	180' general	180' general	180' general	180' general	60' general + 60' fitness	60' general + 60' fitness	60' general + 60' fitness	Individual							
	Coordination	Orientation, balance, conversion and coupling capability		Reaction, rhythm & different. cap.	General coordination	General coordination	General coordination	General coordination	General coordination	General coordination	Individual							
	Games	Many game forms!			Low-risk game forms	Low-risk game forms	Low-risk game forms	Low-risk game forms	Low-risk game forms	Low-risk game forms	Individual							
	General conditioning	Speed and general endurance			Speed and AEC	AEC 1/2	AEC 1/2	AEC 1/2 and AEP	AEC 1/2 and AEP	AEC 1/2 and AEP	Individual							
	Training session strength/week	-	-	-	-	1 × 60' technique training	1–2 × 60'	2 × 60'	2–3 × 60'	2–3 × 60'+	Individual							
	High-speed strength	← Jumping/throwing/hitting/kicking/pushing/pulling →			-	6 E/10–15 R/2 S/2' P	6–7 E/20 R/3 S/3' P	8–9 E/20 R/4 S/3' P	10–11 E/25 R/4 S/3' P	11–12 E/30 R/4 S/3' P	Individual							
	Strength endurance	-	-	-	-	6 E/45–1' W/2 S/1' P	6–8 E/40 R/3 S/1' P	8 E/40 R/4 S/45–30" P	8 E/50 R/4 S/45–30" P	8 E/60 R/4 S/45–30" P	Individual							
	Hypertrophy	-	-	-	-	-	5–6 E/12 R/2 S/1' P	7–8 E/10 R/3 S/1' P	9–10 E/8 R/4 S/2' P	11–12 E/8 R/4 S/2' P	Individual							
Intramuscular coordination	-	-	-	-	-	-	-	5–6 E/5–4 R/2–3 S/3' P	7–8 E/3 R/4 S/4' P	10–12 E/2 R/5–6 S/5' P								
ADDITIONAL MEASURES	Performance diagnostic	3–4 × per season measure body height and body weight, technique tests swimming/starts and turns/uw butterfly kicks, coordination tests, glide tests, dive tests, speed tests, endurance tests			1 × per month measure BH and 1 × per week BW, technique tests swimming/starts and turns/uw butterfly kicks (+video), glide tests, speed tests, endurance tests, standard series, competition analysis, tests on land for strength/flexibility/jump strength	1 × per month measure BH and 2 × per week BW, video analysis (ow+uw) swimming/starts and turns/uw butterfly kicks, competition analysis (+video & lactate), glide tests, speed tests, endurance tests (+lactate), standard series (+lactate), tests on land for strength/flexibility/jump strength	2 × per week measure BW (in TC/competition daily), video analysis ow and uw for swimming/starts and turns/uw butterfly kicks, competition analysis +video and lactate, glide tests, speed tests, endurance tests +lactate, standard series +lactate, tests on land for strength/flexibility/jump strength	-										
	Sports medicine	Family doctor			Family doctor, Swiss Olympic sports doctor, basic sports medical examination 1 × per season, injury treatment (-consultation) available 24/7	Family doctor, association doctor, SOA sports doctor, basic sports medical examination 1 × per season, 2 × per season additional blood tests, injury treatment (-consultation) available 24/7	Family doctor, association doctor, SOA sports doctor, basic sports medical examination 1 × per season, min. 2 × per season additional blood tests, injury treatment (-consultation) available 24/7	Individual										
	Physiotherapy	Only if necessary (after referral by family doctor)			Preventive examination 1 × per season, consultation/treatment if necessary	Preventive examination 1 × per month, injury treatment (-consultation) available 24/7, full support in training camps/target competitions	Preventive examination 2 × per month, injury treatment (-consultation) available 24/7, full support in training camps/competitions	Individual										
	Mental training	-	Expand social manners for togetherness in the group	Practice emotion control (win-loss), practice cognitive control (concentration)	Improve emotion control (relaxation exercises), improve cognitive control (attention control), practice motor imagery	Improve emotion control (coping with stress), attention training, improve motor imagery (ideomotoric training)	Train stress management, attention training, ideomotoric training	Find and train individual optimal strategies – if necessary with professional support	Optimize and train individual strategies – if necessary with professional support	Optimize and train individual strategies – if necessary with professional support	Individual							
	Media training	-	-	-	-	-	-	Impart basic knowledge per handout &/ lecture	Media training in groups: appearance, rhetoric, handling	Individual media training: appearance, rhetoric, handling	Individual							

# Training Zones

SYMBOL	TRAINING ZONES	DESCRIPTION ENERGY SOURCES	LOADING DURATION (MIN)		RPE	V IN % OF ACT. PB	LACTATE (MMOL/L)	HEART RATE	VO2MAX	PAUSE	RECOVERY	SD 50–100	MD 200–400	LD 800–1500+	METHODS	PARTICULARITIES
REG	Regeneration/ Compensation	<ul style="list-style-type: none"> <li>For regeneration, training load processing and preparation for training loads</li> <li>Energy supply from carbohydrates, fats, lactate</li> </ul>	–		"very light" Borg < 9	< 75%	< 1,5	Before puberty: <140 after: 100–120	60–70%	–	–	Up to 3,000 easy	Up to 3,000 easy	Up to 3,000 easy	Continuous method	Swimdown after intensive training and after competition up to lactate < 2.5 mmol/l
AEC1	Aerobic Capacity (aerobic endurance ext./int.)	<ul style="list-style-type: none"> <li>Extensive aerobic capacity</li> <li>Energy supply from carbohydrates (muscle, blood, liver), fats, lactate</li> </ul>	T1	20–40'	"light" Borg 10–12	75–80%	1,5–2,5	Before puberty: 140–150 after: 120–145	70–75%	1,500s → 40–60" 800s → 40–60" 400s → 30–60" 100/200 → 20–30" 50s → 15–30"	6–12 hours	≤ 3,000	≤ 3,000	≤ 5,000	Continuous method, fartlek training	<ul style="list-style-type: none"> <li>Ability to supply energy from fats and lactate</li> <li>Improves buffer capacity</li> <li>Optimizes the refilling speed of the glycogen storage</li> </ul>
			T2	30–45'		FR frequency:										
			T3	40–60'		100–31										
			T4	45–60'		200–30										
			E1+	45–60+'		400–27										
AEC2	Aerobic Capacity (aerobic endurance ext./int.)	<ul style="list-style-type: none"> <li>Intensive aerobic capacity</li> <li>Swimming speed at 3 mmol/l</li> <li>Energy supply esp. from carbohydrates (muscle, blood, liver)</li> </ul>	T1	20–40'	"middle" Borg 13–14	80–85%	2,5–3,5	Before puberty: 150–170 after: 145–160	75–80%	800s → 1–2' 400s → 30–60" 100/200 → 20–30" 50s → 15–30" 25s → 10–15"	12–24 hours	50–800s	50–800s	50–800s	Extensive interval	<ul style="list-style-type: none"> <li>Improves heart stroke volume, blood volume, pulmonary capillary capacity, capillarization</li> <li>Increases myoglobin and mitochondrial concentration</li> </ul>
			T2	30–45'		FR frequency:										
			T3	40–60'		100–35										
			T4	45–60'		200–33										
			E1+	45–60+'		400–31										
AEP	Aerobic Power (VO2max)	<ul style="list-style-type: none"> <li>VO2max</li> <li>Not mandatory necessary for 100–200 m swimmers</li> <li>Essential for distances &gt; 200 m = "Race Pace"</li> <li>Energy supply esp. from carbohydrates (muscle, blood)</li> </ul>	T2	–	"very hard" Borg 18–20	100%	5–8	Before puberty: 190–210 after: 170–190	95–100%	5–30" (depending on interval distance)/ 3–4' SP (active)	48–96 hours (max. 1–2 x/ week)	–	≤ 1,500 à 2–3 series with 50–100s	≤ 3,000 à 2–3 series with 50–200s	Intensive interval	<ul style="list-style-type: none"> <li>Improves maximum oxygen absorption</li> <li>Improves capillarization, buffering capacity and increases myoglobin and mitochondrial concentration</li> </ul>
			T3	4'		MD-LD										
			T4	4–12'		"Race Pace"										
			E1	4–16'		FR frequency:										
			E2	8–24'		45–50										
			ANC	Anaerobic Capacity (lactate production/ speed endurance)		<ul style="list-style-type: none"> <li>Anaerobic capacity</li> <li>Under distance sector</li> <li>Energy supply from muscle storage (ATP/CP/glycogen) and carbohydrates (blood)</li> </ul>										
T2	4'	FR frequency:														
T3	8'	50–55														
T4	8'															
E1+	8+'															
ANP	Anaerobic Power (lactate tolerance/ competition-specific endurance/stamina)	<ul style="list-style-type: none"> <li>Anaerobic power</li> <li>Lactate tolerance for 50–400 m swimmers = "Race Pace"</li> <li>"Broken Swim", i.a. for forecast</li> <li>Energy supply from carbohydrates (muscle, blood)</li> </ul>	T1	–	"very hard" Borg 19–20	100%	"Broken Swim" 8–10 ... Accumulation: Max.I (> 16)	Before puberty: 220 after: 180–200	–	"Broken Swim" 5–30" (dep. on interval distance)/ 3–20' SP (active) 40"–10" (dep. on interval distance – active)	72–96 hours (max. 2–3 x/ week)	≤ 400 "BS" à 2–3 series with 25–50s	≤ 600 "BS" à 2–3 series with 25–75s	–	"Broken Swim"	<ul style="list-style-type: none"> <li>Ability to endure high lactate levels</li> <li>To maintain swim technique against fatigue</li> <li>Improves buffer capacity</li> </ul>
			T2	2–4'		SD-MD										
			T3	4–6'		"Race Pace"										
			T4	4–16'		FR frequency:										
			E1+	6–16'		50–55										
S	Speed (Sprint)	<ul style="list-style-type: none"> <li>Sprint speed</li> <li>Starts and turns training and mobilization</li> <li>Energy supply from muscle stores (ATP/CP/glycogen)</li> </ul>	T1	2'	"light" Borg 10–12	105–110%	Up to 5 possible	Before puberty: 170–190 after: 160–180	–	1.5–5' (active)	12–72 hours	≤ 300 with 10–40s (max. 15'')	≤ 300 with 10–35s (max. 15'')	≤ 300 with 10–25s (max. 15'')	Repetition method	<ul style="list-style-type: none"> <li>Maximum fast movement programs with optimal technique in the anaerobic-alactacid area</li> </ul>
			T2	3–4'												
			T3	4–6'												
			T4	4–8'												
			E1+	4–8+'												

# Legend

BF	Basic form
FF	Fine form
SC	Swiss Championship
SCSC	Swiss Championship Short Course
JRC	Junior Regional Championships
JSC	Junior Swiss Championship
JCC	Junior Club Championship
CC	Club Championship
EYOF	European Youth Olympic Festival
alt. comp.	Alternative competition
JEC	Junior European Championship
YOG	Youth Olympic Games
EC	European Championships
SCEC	Short Course European Championships
WC	World Championships
SCWC	Short Course World Championships
OG	Olympic Games
CISM	Competition of the Conseil International du Sport Militaire (International Military Sports Council)
y	Years
U16	Under 16
NWF	Nachwuchsförderung (promotion of young talent)
eidg. FA	Federal Certificate of Competence
SLRG	Schweizerische Lebensrettungsgesellschaft (Swiss Lifeguard Society)
J+S	Jugend+Sport (Youth+Sport)
BLS AED	Basic life support automated external defibrillators (first aid)
BTL	Berufstrainerlehrgang (Professional Trainer course)
DTL	Diplomtrainerlehrgang (Diploma Trainer course)
LS	Leistungssport (high-performance sport)
NW	Nachwuchs (Juniors)
SOA	Swiss Olympic Association
BASPO	Bundesamt für Sport (Federal Office of Sport)
CST	Centro Sportivo Tenero (Tenero Sports Center)
♂	Male
♀	Female
♂ ♀	Regardless of gender
★	Extent of trainability
★★	Extent of trainability
★★★	Extent of trainability
★ ★ ★	Sensitive phase of trainability
MAC	Macrocycle
Int.	Intensive
comp.	Competition
60'	60 minutes
≤	Up to ...
TE	Technique
Var. avail.	Variable availability
V	Velocity
BA	Backstroke
uw	Underwater
ow	Over water
div.	Diverse

stab.	Stabilize
~	Alternating
+/-	With or without
+	With
-	Without
✓	Should be part of the training weekly
-	Volume according to percentage apportionment
⚠	CAUTION: Intensive training area – load must be adapted to the performance ability of the athletes!
⊕	More training per week possible with this content, but be CAREFUL! Due to intensive training zone – load must be adapted to the performance ability of the athletes!
T	Talent
≤ ... +	Up to ... and more
@	Send-off times
V	Velocity (speed)
BW	Body weight
different. cap.	Differentiation capability (coord. capability)
MB	Medball
SB	Swissball
E	Number of exercises
R	Number of repetitions
S	Number of series
P	Duration pause
W	Duration work
BH	Body height
24/7	Around the clock
&/	And/or
VO2max	Maximum oxygen uptake capacity
ACT. PB	Actual personal best
FR	Freestyle
BU	Butterfly
BR	Breaststroke
SD	Short distance
MD	Middle distance
LD	Long distance
IM	Individual medley
dep.	depending

## BIBLIOGRAPHY



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