



Returning to Competition after a Long Break: A Practical Guide for the Adult Swimmer

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Abstract

The resumption of competitive swimming after an interruption of several years confronts the adult athlete with a planning problem for which the training practices of the competitive years offer no solution. Those practices were formulated on the assumption of daily sessions and fast recovery, neither of which is available to an adult with professional and family obligations. The present guide describes the weekly training model on which one breaststroke swimmer returned to masters competition, and it states every quantity contained in that model together with the condition under which the quantity is changed and the sign by which its effect is recognised. Six of its elements were not found, in the form given here, in the literature reviewed for the guide: a four-session week constructed around recovery in preference to a distance target, gym repetitions derived from the stroke count of the race, a rest between repeats set at 1.25 to 1.3 times the swim time, a session distance raised in steps that are earned by an observable sign without reference to the calendar, a taper adjusted for change in fitness, and a catalogue of the common mistakes of a return, each with its warning sign and its correction. The model is built around four sessions per week, comprising a set of 50 m repeats swum at race pace on a calculated interval, a sprint session, a weights session and a bodyweight session, with stretching and joint mobility work distributed across the remaining days. Session distance is increased in six steps from 1,200 m to a working range of 2,200 to 2,500 m over a period of six to eight weeks, the transition between steps being conditional on the swimmer's recovery from the preceding one. The rest between repeats is determined as the swim time multiplied by 1.25 to 1.3, and the number of repetitions in dry-land exercises is derived from the number of stroke cycles in the target race. The taper occupies one and a half to two weeks and consists in the replacement of the main set with broken swims at race pace under a reduced distance. Over the first season on this model the swimmer's 200-yard breaststroke improved from 2:08.88 to 2:00.80, and the analysis of the splits from those races indicates where the remaining deficit is located. All quantities originate in the practice of one swimmer and are labelled accordingly, and the limitations of a single record are set out in the concluding section.

Keywords: Adult Swimmer, Breaststroke, Detraining, Masters Swimming, Recovery, Return to Competition, Taper, Training Week.

INTRODUCTION

The adult who decides to return to competition after an absence of several years finds that the two bodies of training advice available to him were written for someone else. Competitive programmes, whatever their level, are constructed on the assumption of an athlete who trains on most days of the week and whose rapid recovery, an assumption that removes from consideration the very constraint which defines the returning adult's situation. Adult fitness literature, on the other hand, is written without reference to competition and therefore without the quantities, intervals and progression criteria that preparation for a race requires. The research literature on masters swimming, which has grown over the last two decades, provides a detailed description of

the way performance declines with age, measured across four decades of championship results (Rubin, 2010; Ganse et al., 2018), of the physiological and technical factors that preserve speed in older competitors (Tanaka & Seals, 2008; Lepers & Stapley, 2016), and of the manner in which masters swimmers organise their training around coached groups (Rathwell et al., 2015). The description of a population is one thing, however, and the prescription of a training week for a particular individual is another, and the literature stops at the boundary between them.

In the absence of guidance written for his situation, the returning swimmer reverts to the only detailed plan in his possession, which is the training he performed when training was last a serious occupation. That plan was appropriate

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to an organism that swam twice a day and had no other demands on its recovery. When it is applied to an adult body after an interval of years, the outcome takes one of two forms that are familiar to any coach who has worked with adult groups. In the first, the former volumes are attempted, the joints respond within weeks, and the accumulation of fatigue outruns the capacity for recovery until training is interrupted by injury or exhaustion. In the second, the swimmer, aware of the first danger, reduces the load to a level at which nothing is risked, swims at an easy pace for months, and observes that the times recorded in competition remain where they were.

The present guide proposes a third course between these two failures and states that course in quantities. Its subject matter is confined to five questions, each of which forms a chapter. These are the conduct of the first weeks after the return, the construction of the training week, the construction of a single pool session, the criteria on which the decision to increase load is taken, and the manner in which a competition is entered and its result interpreted. Each recommendation in the text is accompanied by an amount, by the condition under which that amount is modified, and by the observable sign that indicates whether the recommendation has produced its intended effect. The plan can therefore be executed and corrected by a swimmer who trains without a coach.

What the guide contributes is a set of working rules committed to writing, and no claim of discovery is attached to them. Six of those rules were not found, in this form, in the literature reviewed for the guide.

- A four-session week constructed around what the swimmer recovers from, with fixed rules for reducing it to three sessions or extending it to five.
- A method of deriving gym repetitions from the number of stroke cycles in the race for which the swimmer is preparing, one stroke cycle being one complete pull and kick.
- A rule for the rest between repeats, under which the rest equals the swim time multiplied by 1.25 to 1.3, and which Chapter 3 converts into a table.
- A stepped increase in session distance, in which each step is earned by a sign the swimmer can observe, without reference to the calendar.
- A taper adjusted for change in fitness.
- A catalogue of the mistakes made on returning, each with the sign that reveals it and the correction that removes it.

None of these rules is taken from the literature.

The material on which the guide is based is a single competitive record. The author was trained in breaststroke from the age of seven until his mid-twenties, competed at national and collegiate level, ceased regular training for a period of years,

and returned to masters competition in Florida in 2026, his last competition results before the interruption having been recorded in 2018. Chapter 5 reports the results obtained across the first season of the return, with the times and the 50-yard splits as they appear in the author's own results file, and the interpretation offered there is limited to what those figures support. The physiological and biomechanical foundation of preparation for the 200 m breaststroke is treated in the author's companion monograph on that distance, and the present guide is situated one level below it, at the level of the action to be performed and the quantity to be observed.

The guide is addressed to swimmers who are resuming training after a break, to competitors in the masters category, and to coaches who work with adult groups. The examples are drawn from breaststroke because breaststroke is the stroke in which the underlying record was produced, and the reader should distinguish between two kinds of content in what follows. The structure of the week, the structure of the session, the interval rule and the repetition rule are formulated in terms that apply to any stroke. The attention given to the knee joint, by contrast, is specific to breaststroke, and a swimmer of another stroke will substitute the joint priorities appropriate to it.

Two limitations are stated at the outset and repeated where they apply. Where the author's record contains no quantity for a given decision, the guide states a principle and identifies it as such, and no quantity has been supplied from any other source in order to fill such a gap. A medical examination before the return to competitive loads is treated throughout as a sensible precaution, in particular where the joints have a history, and nothing in the guide is intended as medical advice or as a substitute for the judgement of a physician.

The guide may be read in two ways. A swimmer with limited time can begin at Chapter 2, take the weekly template and the distance steps, and return to Chapter 1 when a question about the first month arises. A coach will find the working instruments of the plan in the tables: Table 2.3 contains the week, Table 3.1 the session, Table 3.2 the conversion from pace to interval, Table 4.2 the derivation of gym repetitions, and Table 5.1 the taper. The forms in the appendix are intended to be printed and kept with the training log, and the glossary defines the swimming and training terms as they are used in the text.

CHAPTER 1. ASSESSING THE STARTING POINT AND THE FIRST WEEKS

The outcome of a comeback is determined to a large extent in its first month, before any of the quantities in later chapters have come into use. The purpose of this chapter is to establish a reference point against which later progress can be measured, to keep the load of the first month within the range in which errors are inexpensive, and to name the signs on which the decision to proceed is taken.

What Changes after a Break

The changes that an interruption of several years produces in a formerly competitive swimmer fall into four groups, of which three represent losses and one a retention, and the distinction between them determines the whole design of the return.

The first change concerns the rate of recovery. A session which a twenty-year-old absorbed by the following morning is absorbed by an adult of forty over two days, and this fact, which is familiar to every masters athlete from experience, is confirmed by the research literature. The narrative review of performance and recovery kinetics in masters athletes (Borges et al., 2016) reports that after a hard session masters competitors require a longer period than younger athletes to return to their baseline values, and that the difference between the two groups widens with the intensity of the session. It follows that the training week of a returning adult has to be constructed from the amount of load that is recovered from before the next hard session, and Chapter 2 develops this principle into a weekly model.

The second change concerns the order in which capacities are lost. Aerobic capacity is the first to decline during detraining and the last to be restored. In a review of the cardiorespiratory and metabolic consequences of detraining in endurance athletes (Barbieri et al., 2024), a cessation of training for longer than four weeks was associated with a reduction in maximal oxygen uptake of the order of 11 to 16 per cent, and the interruption considered here is measured in years. The loss begins in the early weeks of inactivity and does not await the end of the break, as the detraining period observed in a multicomponent exercise programme for

older adults illustrates (Moradell et al., 2020). The capacity to sustain distance is recoverable, but its recovery occupies more weeks than it did in the competitive years, which is the reason for the graduated increase in session distance described in 1.3 and 2.4.

The third change concerns the joints, whose response to renewed load precedes that of the muscles, and in breaststroke the knee is the first joint to respond. A survey of 88 masters swimmers (Atilla et al., 2020) found musculoskeletal pain in 69.3 per cent of respondents, the shoulder being the most common site at 42.0 per cent and the knee accounting for 10.2 per cent, and the order of the sites is of less consequence than the overall figure. The returning adult therefore enters a population in which pain is already prevalent, and a knee that hurts in the second week is to be understood as reporting a real event and as calling for the actions prescribed in 3.1 and 4.3.

The fourth change is retention. The stroke pattern that was built over years of competitive training outlasts the aerobic system by a wide margin, and in masters swimmers technical proficiency accounts for a substantial part of the speed that is preserved with age (Zamparo et al., 2012). A returning swimmer who was once trained to competitive level therefore places a skill that has survived the interruption on top of an engine that has contracted, and the rebuilding of the engine is a shorter undertaking than the original construction of the skill was. This asymmetry between what is lost and what is retained is the reason a small training week can produce competitive results, and it is assumed throughout the guide.

Table 1.1 sets the four changes side by side, since each of them leads to a different action.

Table 1.1. What the break changes, and what follows from it

What changes	Before the break	Coming back	What to do
Recovery between hard sessions	Overnight, twice-daily work possible	Slower, a hard session needs a clear day behind it	Plan the week from recovery, Chapter 2
Tolerance of weekly volume	High, sustained by daily training	Reduced first and by the largest margin	Rebuild volume in steps before adding intensity, 1.3 and 2.4
Joint response to the breaststroke kick	Absorbed within normal training	Answers early, knee first	Treat the warm-up as a separate block, 3.1
Technical skill	Built and maintained	Retained	Use it from week one, do not re-teach the stroke

Source: the author's practice, with population context from Barbieri et al. (2024), Moradell et al. (2020), Atilla et al. (2020) and Zamparo et al. (2012).

The most difficult adjustment, however, lies outside the body. The swimmer is required to abandon the conviction that the body can still absorb the load it absorbed five, ten or fifteen years earlier, and the persistence of that conviction, in one form or another, underlies each of the mistakes catalogued in 5.4.

The Reference Point

The author's rule for the first week reads as follows. Swim 25 m sprints and nothing else outside of aerobic work described

in 1.3. The purpose of the week is the recovery of the feel for the water and the observation of the body's response to a short maximal effort: the condition of the knee on the following morning, the condition of the shoulders, and the time taken by heart rate to return to rest. The times may be noted if that is found useful, and they are to be treated as notes. The question of the reference point against which later progress is to be assessed is answered in the author's practice by the first competition, and the reasoning behind that answer deserves a statement. A timed trial performed

in the first week measures a swimmer who has not yet recovered the feel for the water, and a time obtained under those conditions contaminates every later comparison in which it is used. The first meet, by contrast, provides a time that is recorded by officials under standard conditions, that is obtained with other competitors in the water, and that recurs at intervals throughout the season, so that each subsequent result can be measured against it on equal terms. In the season described in this guide, the first 200-yard breaststroke race was swum in February 2026 in a 25-yard

pool in 2:08.88, and the third race of the season, in April, was swum in 2:00.80.

Before the first month begins, the baseline record in Table 1.2 is completed once and retained. Pool type is recorded on every line with the standard codes, SCY for a 25-yard pool, SCM for a 25-metre pool and LCM for a 50-metre pool, and times obtained in different pool types should not be set against each other. The record is reread after three months and after six.

Table 1.2. Baseline record, filled once before the first session

Item	Entry	Why it is kept
Date of first session		Anchors every later interval
Years since regular training		Sets expectations for the first month
Best known times, with pool type, SCY, SCM or LCM		Historical context, never a target for the first season
Comfortable continuous swim, in metres		Starting point for the distance steps, 2.4
Knee: full flexion under load, painless, restricted or painful		Decides whether kick sets enter in month one
Ankle and hip: mobility as it feels today		Baseline for the mobility work, 2.3
Medical screening completed		See the note below
Training time available per week		Decides how the week is fitted, Table 2.4

The case for a medical examination before the return is stronger where the joints have a history or where the intention is to compete, and the scope of such screening for swimmers has been described in the literature on medical care for the sport (Khodae et al., 2016). This guide gives no medical advice, and the decision rests with the swimmer and the swimmer's physician.

The First Weeks in the Water

The first month is conducted in the most sparing regime the swimmer is prepared to accept. Its purpose is the acquisition of information about the present response of the joints, the cardiovascular system and the muscles to load, and that information is obtained at lowest cost while the load is small enough for a wrong estimate to have no consequence.

Four rules hold for the first month.

- Aerobic work comes first and intensity waits. Sessions run at an easy aerobic pace, with short sets a little faster and still comfortable. The author's sets in this phase were freestyle repeats over 50 and 100, such as 10 to 16 × 50 and 6 to 8 × 100. On some days he mixed freestyle with individual medley inside the same set, four repeats of one and four of the other, which keeps load off the breaststroke kick.
- Session distance starts at 1,200 m and rises in the steps of Table 2.5.
- Equipment is limited to two items, a kickboard for kick work and a pull buoy for pull work. Paddles, fins, snorkels and bands come later, when a set has a use for them.
- Gym work follows its own rule. If gym sessions were running before the comeback, keep them at two a week

at the same intensity. If they were not, introduce gym work for muscle tone only. Swimming is the new load, and when the two clash, the gym session is the one to reduce.

The introduction of anaerobic sets is conditional on the appearance of what the author describes as aerobic and muscular confidence in the water, a state recognised by feel in which breathing and the working muscles are no longer the limiting factor in an easy session. The author names that feeling as the trigger, and the heart-rate criterion described in 3.3 supplies one measurement in support of it.

Stop rules, first month. Any recognizable pain in one spot ends that set, and the swimmer switches to a stroke that leaves the joint alone. Pain that is still there the next morning removes kick work from the next session. A session that leaves the swimmer flat two days later means the distance step was too large, and the swimmer repeats it.

The significance of the fourth rule is illustrated by a situation that arises with some regularity. A swimmer who has maintained a gym routine throughout the interruption returns to the pool, retains the routine unchanged and adds two swims to it. By the third week the swims are perceived as heavier than they were, although neither the gym sessions nor the swims have been altered, and the increase in fatigue is attributable to the sum of the two loads. The correction follows the rule: the gym session that precedes the hard swim is reduced to tone work, and the swims are retained as planned, because the swims are the load for which the comeback is being undertaken.

Entry Checklist

Table 1.3 is the checklist for the first four weeks. Print it and keep it with the training log.

Table 1.3. Entry checklist for the first four weeks

Stage	Action	Done when	If not
Before the first session	Medical screening considered, baseline record filled	Both complete	Screening pending: keep effort aerobic, no maximal work
Before the first session	Weekly time budget fixed	Number of sessions decided	Assume the lower number
Week 1	25 m sprints only, no timed trial	The feel for the water is back and the joint response is known	Extend week 1 by a week
Weeks 1 to 4	Session volume held at 1,200 m, aerobic	Sessions end with reserve	Hold the volume. Do not advance
Weeks 1 to 4	Two items of equipment only	No paddles, fins or bands used	Remove them
Weeks 1 to 4	Dry-land at two sessions or tone work	Gym does not degrade the next swim	Cut the gym, keep the swim
Weeks 1 to 4	Morning-after check on knee and shoulder	No carry-over pain	Remove kick work from the next session
End of week 4	First meet identified and entered	A date exists	Choose one, the date leads the plan, 5.1

The final row is the one that gives the plan a terminus. In the absence of a date, the comeback drifts into the comfortable swimming that leads nowhere, which is the second of the two failures identified in the introduction.

CHAPTER 2. THE WEEKLY MODEL

Chapter 1 established a starting point. The present chapter sets out the week that follows from it, the rules by which that week is adapted to a particular swimmer, and the signs on which the decision to add load is taken.

Recovery as the Basis of Planning

A competitive training week is planned from a distance target, a number of kilometres to be distributed across a number of sessions, and the recovery of the athlete is treated as a resource that will be found sufficient. The culture of the sport reinforces that order of planning, since distance remains the headline figure of a programme. In some instances, national programmes have been described as aiming at up to 110 km per week during the period of aerobic activity (Wirth et al., 2022), a figure that a returning adult has no means of using. The returning adult plans from the opposite end. The first question is the quantity of load from which the body recovers before the next hard session, and the number of hard sessions that can be accommodated in a week is a consequence of the answer to that question and of nothing else.

The limitation in question is measurable, as the review of recovery kinetics in masters athletes (Borges et al., 2016) demonstrates, and its practical consequence is a week that is planned by the number of hard sessions it contains. Two hard sessions from which the swimmer recovers produce an improvement in speed. Four hard sessions from which the swimmer half recovers produce an accumulation of fatigue, with the same distance entered in the log, and the distinction between the two weeks is invisible in the log and decisive in the result. There is a measured reason for planning around a

load that can be sustained across a season in preference to a peak: among ageing endurance athletes, changes in training distance accounted for 54 per cent of the variance in the rate at which maximal oxygen uptake declined in men (Burtscher et al., 2022), and the operative condition in that finding is that the distance was maintained, since a distance held for a year has a greater effect than a distance reached for a month and then abandoned.

The contrast is supplied by the author's own history. His training logs from 2013 and 2014 record up to two sessions per day, each swim covering 4.5 to 6 km with a median in the region of 5.2 km, and alongside the swimming a structured gym programme of three sets of twenty repetitions at about 40 per cent of the working weight. That regime was appropriate to the circumstances under which it was performed, on a day that contained nothing else and in an organism whose recovery was complete by morning. Its reproduction under present circumstances produces the first of the two failures described in the introduction, and the record of those years is introduced here for the purpose of that contrast and for no other.

The base that was constructed in those years is the reason the present week can be small. With a decade of technique and endurance behind him, the swimmer gains nothing from additional distance and gains everything from hard sessions that are performed on a rested body, and four such sessions, each of which is recovered from before the next, represent the load that an adult with professional obligations can sustain across an entire season without interruption. Research on the training of elite swimmers arrives at a corresponding conclusion on the relation between quality and quantity from a different direction, in the perceptions of expert coaches (Nugent et al., 2017) and in the training patterns observed in a twenty-year cohort before season-best performances (Hellard et al., 2019), although the practical reason in the present case is the simpler one of sustainability.

Four Sessions a Week

The plan holds four sessions: two in the water, two in the gym, with stretching and joint work spread across the other days.

Table 2.1. The four sessions and their division of labour

Session	What it does	Why it is not combined with another
Water, threshold	Raises the effort the swimmer can hold at race pace	Needs a clear day before it. Combined with sprint work, neither part yields intended result
Water, sprint	Trains top speed and fits technique to it	Needs full rest between repeats, which threshold work does not allow
Gym, weights	Builds the force behind the pull and the kick	Draws on the same recovery as the threshold swim
Gym, bodyweight	Fast, explosive work that is easy on the joints	Costs little recovery, so it can sit next to a swim

The sessions are to be arranged so that each session of high recovery cost is followed by a lighter day. The threshold swim and the weights session form the costly pair, and they are kept apart in the week. The sprint swim and the bodyweight session cost less, and either of them may follow a costly one. The rule for their arrangement is that two costly sessions are never placed on consecutive days, and the third column of Table 2.1 gives the reason none of the four is combined with another.

Stretching and Mobility

Stretching in this plan is divided into two kinds which carry different risks and are governed by different rules, and the treatment of the two as a single activity is the most common error in this part of the week. Muscle stretching serves recovery and general condition, can be performed daily, and tolerates being performed in a state of fatigue. Mobility work on joints and ligaments serves the preservation of the range of motion on which the breaststroke kick depends, requires a longer recovery than muscle tissue does, and is the site of most stretching injuries, which occur when effort is applied beyond the range the joint can accept on that day.

Table 2.2. Two kinds of stretching and their amounts

	Muscle stretching	Joint and ligament mobility
Frequency	Daily	Every other day
How much	A few minutes, before/after sessions and on rest days	5 to 10 minutes a time
Purpose	Recovery and general condition	Maintaining the range of motion
Risk	Low	Real. Forced effort injures
Rule	Can be done when tired	Set up the support before starting, and never force it
When to stop	Discomfort that does not ease during the stretch	Any uneasy feeling in the joint. Stop for that day

The principal exercise for the breaststroke knee is a seated stretch, and it illustrates the support rule that governs all joint work. Sit on the floor with the back straight. Place the shins on the floor beside the thighs, feet turned outward as they are just before the kick. Start with the heels against the thighs, and over the following weeks let the heels move further away. Keep the hands flat on the floor where they can take weight throughout. The hands are what take load off the knee at the moment the joint reaches its limit, and that support is the difference between a stretch and an injury. Do 5 to 10 minutes, every other day.

For the hips, use the butterfly position, sitting with the soles of the feet together and drawn in toward the body, and side splits. Both keep the range the final phase of the kick depends on, when the legs close.

The level of ambition in this work is a matter of consequence. At the present stage the purpose of joint mobility work is the maintenance of the range the swimmer already possesses, since the flexibility in question was acquired during the competitive years and the task of the returning swimmer is to prevent its loss. The research on the development of flexibility is concerned for the most part with young athletes who are still growing (Donti et al., 2022), which is a different undertaking from the one described here. The pursuit of additional range confers no advantage on a swimmer whose technique was built on the range he already has, and it is paid for in joints.

The weekly template and its adjustment

Table 2.3 gives the week for four sessions. The author's material fixes the sessions and their order of recovery cost. The weekdays in the table represent one arrangement that respects that order, and a swimmer whose week is organised around other days retains the order and moves the days.

Table 2.3. Weekly template, four sessions

Day	Session	Content	Recovery cost
Monday	Water, threshold	Session as in Chapter 3 with the threshold set as the main part	High
Tuesday	Gym, bodyweight	Full session, up to 45 min	Moderate
Wednesday	Stretching only	Joint work 5 to 10 min, plus muscle stretching	None
Thursday	Water, sprint	Session as in Chapter 3 with the sprint set as the main part	Moderate
Friday	Gym, weights	Full session, explosive on the working phase, up to 45 min	High
Saturday	Stretching only	Joint work 5 to 10 min, plus muscle stretching	None
Sunday	Rest	Muscle stretching if wanted	None

The order in which sessions are removed or added is fixed, so that the session removed first is never the one performing the work. Table 2.4 states the rules by which the week is fitted to a different number of sessions, and those rules follow from two principles in the author's material: swimming is the load for which the comeback exists, and the gym is the session that gives way when the two come into conflict.

Table 2.4. Fitting the plan to the time available and to how the swimmer feels

Available sessions	What changes	What is protected
Five	Add a second, shorter easy swim. Do not add a third hard session	The limit of two hard sessions
Four	The plan as written	
Three	Drop the bodyweight session. Keep both swims	Both swims
Two	Keep the threshold swim and one gym session. Work sprints into the swim on alternate weeks	The threshold swim
Shift work	Keep the order and move the weekdays: costly, cheap, costly, cheap	The gap after each costly session
A tired spell	Swim the sprint session easy and hold the distance for one week	The threshold swim

Session distance is increased in steps. The steps in the author's record ran 1,200 m, 1,500 m, 1,800 m, 2,000 m, 2,200 m, then 2,200 to 2,500 m, over six to eight weeks. The transition from one step to the next is made when the session ends with something in reserve and the following session is unaffected by it. Where a step fails to meet that criterion the step is repeated, and the repetition of steps is the reason the duration of the progression is stated as a range.

Table 2.5. Session distance, step by step

Step	Session distance	Move up when	If not
1	1,200 m	The session ends with something left, and the next one is unaffected	Repeat the step
2	1,500 m	Same sign	Repeat the step
3	1,800 m	Same sign	Repeat the step
4	2,000 m	Same sign	Repeat the step
5	2,200 m	Same sign	Repeat the step
6	2,200 to 2,500 m	Working distance. Do not go above it	Hold at 2,200 m

Source: the author's practice, completed over six to eight weeks.

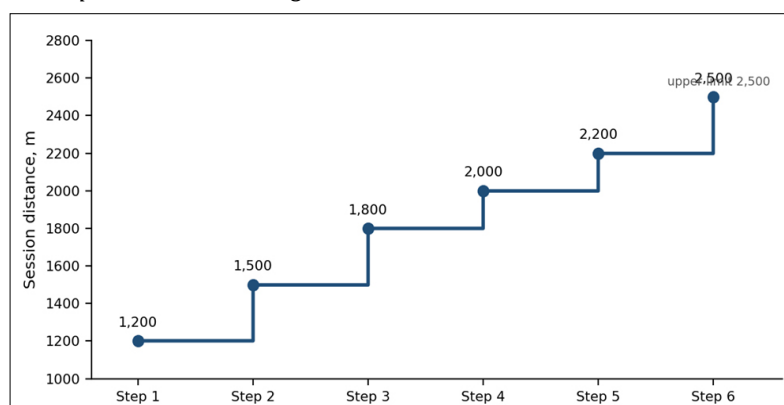


Figure 2.1. Session distance, step by step. The swimmer moves up on the sign in Table 2.5 without reference to the calendar, which is why six steps occupied six to eight weeks. Source: the author's practice.*

The upper limit of 2,500 m is explained in the author's record by two considerations, the time available to an adult and his judgement that beyond that point the return from each additional hundred metres falls below its cost in time and recovery. The second consideration is a judgement about diminishing returns on the base described in 2.1, and a swimmer with more time at his disposal may set the limit higher.

Hard sets are introduced once the swimmer feels steady in the water, in the lungs and in the legs. That sign is a judgement, and it is left as a judgement by design, since a returning swimmer seldom has laboratory testing at his disposal and the postponement of a decision until a number he cannot obtain becomes available is a worse course than the reading of his own body. One inexpensive measurement does exist,

and 3.3 makes use of it: a heart-rate monitor shows when a set has ceased to be hard enough, which is the signal for making it longer.

Once the steps have been completed, the settled week takes the following form. Each swim covers 2,200 to 2,500 m and contains either an anaerobic block of 600 to 800 m or a sprint set of 8 × 25. Gym sessions are hard and short, under 45 minutes. The week is maintained in that form until the taper described in 5.2, which begins one and a half to two weeks before the meet.

CHAPTER 3. THE POOL SESSION

A session has five parts in a fixed order. Each part has an amount, a condition that changes the amount, and a sign that says it is finished.

Table 3.1. The parts of a pool session

Part	What to swim	How much	Finished when
Warm-up	Easy swimming plus joint work, knees first	Until the joints have loosened and breathing has picked up	The knees bend without catching, and effort comes without being forced
Technique	8 × 25: four leg drills, four arm drills	8 × 25, short rest	Concentration slips. Stop there
Pre-set	Freestyle, 8/6/4 × 50 or 6/4 × 100, 20 to 30 s rest	Adjusted to how the swimmer feels, longer on sprint days	Heart rate is up and the stroke feels joined together
Main set	Threshold set or sprint set, 3.3 and 3.4	See below	See below
Cool-down	Easy swimming	200 to 400 m, or until heart rate has come down	Heart rate is back near resting

Total session distance is wherever the steps in 2.4 have reached, and the main set takes up the difference between a 1,200 m session and a 2,500 m one.

Warm-Up and Joint Preparation

The warm-up performs two functions, the elevation of body temperature and cardiac output on the one hand and the preparation of the joints that the stroke will load most heavily on the other, and in breaststroke the second function has a specific object. The knee is subjected to greater load in breaststroke than any other joint, and for that reason it receives its own attention in the warm-up before easy swimming is relied upon to prepare it. The sequence runs through the hips and knees first, then the ankles, then the musculature in general, and a breaststroker devotes a larger share of the warm-up to the legs than a swimmer of any other stroke would.

Two signs indicate that the warm-up is complete. The knee flexes through its full range without catching, and effort is produced without being forced. A swimmer who is still stiff at the technique set has not warmed up, whatever distance has been covered.

Stop rule. If the knee has not opened up after a second warm-up, drop kick work for that session. Swim pull, drills and easy swimming, and move the threshold set to the next session. A threshold set swum on a joint that has not taken the load costs more than the session it postpones.

The instinct of the returning swimmer is to shorten the warm-up, and the usual length of a warm-up therefore deserves statement. The scoping review of warm-up practice in swimming (Cuenca-Fernández et al., 2022) places the in-water component at about 1,000 to 1,200 m, swum at or below 60 per cent of maximal oxygen uptake, with a short interval before racing. The full race-day distance is not required in training, and the figure is cited for its direction: the warm-up is a component of the session with a length of its own. The cost of its omission has been measured. Twenty competitive swimmers timed over 100 m freestyle with and without their habitual pre-race warm-up swam 67.15 s with it and 68.10 s without, and almost the whole of that difference arose on the first 50, 32.10 s against 32.78 s, where the warmed-up swimmers also covered more distance per stroke (Neiva et al., 2014). A returning swimmer stands to lose more than that, because the joints require the preparation even when the lungs have not yet begun to miss it. The cost of the shortened warm-up is visible in a session read backwards from its result. The swimmer arrives late, reduces the warm-up to 200 m and proceeds to the drills, which are perceived as adequate because drills are performed at low speed. The threshold set is then completed two seconds per fifty slower than in the preceding week on the same interval, and the knee is sore on the following morning, with nothing else in the session having been altered except the part that was treated as optional.

Technical Block and Pre-Set

Swim the technique set as 8×25 : four drills for the legs, four for the arms. A drill is a simplified exercise that isolates one part of the stroke.

The length of 25 m is determined by the duration of attention. Full concentration on a single point of technique is sustained for a short period, after which it fades, and from that moment the swimmer is repeating a degraded pattern and has ceased to practise a correct one, so that the set is terminated by attention. When concentration on the drill is lost, the set ends, even at the fifth repeat. This block is the part of the session in which new movement patterns are formed and weak ones are consolidated, and its extension beyond the span of attention undoes the work it was intended to do.

The pre-set forms the link between the drills and the main set. Its standard forms are $8/6/4 \times 50$ or $6/4 \times 100$ freestyle with 20 to 30 seconds of rest, swum fast enough to raise heart rate and slow enough to leave the main set intact. On sprint days the pre-set is longer, because the main set that follows is short. On a day when the body feels heavy the pre-set is shorter and the main set is protected.

The choice of freestyle for this block serves a purpose of its

own. It raises cardiac output without adding breaststroke kicks to a knee that still has the main set ahead of it.

Threshold Work

This is the set on which the 200 m time depends, and it carries the most exact quantities in the guide. Threshold, in the sense used here, denotes the hardest effort a swimmer can hold across a long series without the stroke falling apart.

Swim 10 to 16×50 breaststroke. The interval is 1'20" in a 50 m pool and 1'10" in a 25-yard pool. The interval is the total time for each repeat, the swim plus the rest that follows it. The aim is to reach the limit of what the body can hold and then to hold it: in a set of twelve, the first eight or so build to that limit and the last four are held through it.

Those two intervals belong to one swimmer's practice and are not to be copied as numbers. What carries over is the rule from which they were derived:

Rest equals swim time multiplied by 1.25 to 1.3. The interval is the swim time plus that rest.

A swimmer holding 40 s per 50 rests $40 \times 1.25 = 50$ s, which gives an interval of 90 s, or 1'30". Table 3.2 works the rule through the range a returning swimmer starts from.

Table 3.2. Intervals produced by the rule, from the swimmer's current pace

Pace held per 50	Rest at $\times 1.25$	Rest at $\times 1.3$	Interval, rounded to the pace clock
35 s	44 s	46 s	1'20"
40 s	50 s	52 s	1'30"
45 s	56 s	59 s	1'45"
50 s	63 s	65 s	1'55"
55 s	69 s	72 s	2'05"

Source: the author's rule. Use 1.3 at the start, and move toward 1.25 as the set becomes easier to repeat.

The amount of rest prescribed by the rule is the condition on which the effectiveness of the set depends. In the author's account, a rest of that duration restores the swimmer to the level required for the maintenance of anaerobic intensity across the whole set and for its development from one week to the next, and it is the proportion he found most favourable in preparation for a race of 200 m. The work on the measurement of the threshold in swimming, whether through the biophysical characterisation of the four strokes (Carvalho et al., 2020) or through critical speed and critical stroke rate (Dekerle et al., 2002), supports the wider point that the effort in a set of this kind has to be tied to something measurable in addition to feel.

Two quantities can be read while the set is in progress. The first is the pattern of the times. A set that is held as intended slows a little and slows late. Two recorded sets from the author's practice in a yards pool ran 30-30-30-30-30-31-31-31-32-32 and 30-31-31-31-31-31-32-32-32-32, so that about two seconds are lost across ten repeats and the loss is concentrated at the end. Times that slip in the first third of the set indicate that the swimmer began too fast. Times that

do not slip at all indicate that the set was not hard enough.

The second quantity is heart rate, and it supplies the plan with its criterion for the increase of load. The author's threshold sets are performed at about 162 beats per minute measured between repeats, the average during the swim itself being higher than a manual check can capture. The figure itself is of less consequence than the moment at which it ceases to appear. If heart rate no longer reaches the threshold zone on the fifth or sixth repeat of a 6×50 , the set has ceased to be hard enough, and it is extended to 8 or 10×50 . This is a measurable sign, available to anyone with a wrist monitor, and it converts the instruction to add intensity when ready into a decision that can be taken on evidence. Heart rate is an established means of prescribing effort in endurance sports, with the customary reservation that the appropriate figures differ from one person to another (Kaufmann et al., 2023), and each swimmer therefore reads the monitor against a personal record of sets.

Table 3.3 puts the signs in the order the swimmer reads them, after the set.

Table 3.3. What to decide after a threshold set

What the swimmer sees	What it means	What to do next time
Times slip in the first third of the set	Started too fast	Start slower, hold the same interval
Times hold to the end with nothing lost	Set was not hard enough	Add repeats, up to 16, or update the target times
Heart rate no longer reaches the threshold zone late in the set	Set has become too short for the current fitness	Lengthen the set, 6 × 50 to 8 or 10 × 50. Or start faster and keep the pace
Times slip about two seconds and slip late	Set held as intended	Keep the set, check the recovery sign below
Session ended with reserve and the next session was unaffected	Recovery is keeping up	Move session distance up one step, Table 2.5

Source: the author's criteria.

The preference for repeats of 50 over repeats of 100 or 200 rests on the relation between training speed and racing speed. On repeats of 50 the swimmer works at a speed close to race pace and practises the distance at that speed, whereas longer repeats at the same interval would be swum below it. A season of such sets builds a reserve of speed endurance, and the taper described in 5.2, in the author's account, supplies the endurance component that converts that reserve into a full 200.

Stop rule. If the pace falls off by more than about two seconds per fifty before the last third of the set, stop there. Carrying on means swimming slower with a tired stroke, and that is what the body learns.

Sprint and Finishing the Session

Swim 8 × 25 flat out, with full rest between repeats. Full rest means the next repeat can be swum at or near the same speed, whatever the clock says.

Two rules apply. Hold the technique at top speed, because this is the speed the race is swum at, and a stroke that falls apart at this speed in training will fall apart in the race. And cut the number of repeats before cutting the speed: a swimmer who cannot hold the pace on repeat six stops at six. Breaststroke is the most technical of the four strokes, and the sprint set is the part of the week in which explosive and strength qualities are fitted to the swimmer's own technique at a speed close to that of competition, which is the reason the technical requirement is enforced there with particular strictness.

Finish with 200 to 400 m easy, or as long as heart rate takes to come back near resting, whichever is longer. The omission of the cool-down transfers part of the recovery to the following day, which the week has already allocated to other purposes.

CHAPTER 4. DRY-LAND WORK AND RECOVERY

Gym work in this plan is subordinate to the swimming. It occupies two sessions per week, each under 45 minutes, and rests on one rule for the manner of lifting and one rule for the number of repetitions to be performed.

The Explosive-Effort Principle

Every exercise is done the same way: fast against the resistance, slow and controlled on the way back.

The justification for this manner of lifting is found in the structure of the stroke. Breaststroke consists of a series of separate explosive actions, each followed by a glide, and the purpose of the gym work is the maximisation of the explosive force on which those actions depend, so that the pattern of the lift reproduces the pattern of the stroke. The physiological account of that relationship belongs to the companion monograph. This manner of lifting places the session in a particular range of load: published guidance on the development of fast strength in swimmers recommends light to moderate loads of about 30 to 60 per cent of a one-repetition maximum in preference to heavy ones (Wirth et al., 2022), a one-repetition maximum being the heaviest weight a person can lift once. The plan described in 4.2 arrives at a comparable range from the opposite end, since it fixes the number of repetitions first and allows the weight to follow, and that starting point is its own and is not taken from the published figure. The slow lowering phase carries a consideration of its own. Lowering a weight under control is what trainers term eccentric work, and it brings a soreness and a recovery cost distinct from those of the lifting phase (Suchomel et al., 2019), which is one further reason the session ends at 45 minutes whatever remains on the exercise list. Two rules govern the session.

Stop when the speed goes away. Once the working phase can no longer be done fast, that exercise ends. If the same thing happens on the next exercise too, the session ends. Work performed beyond that point takes place at a velocity the stroke never uses, and it consumes recovery that has already been promised to the next swim.

The session ends at 45 minutes, plan or no plan.

Table 4.1. How to lift, and where the limits are

Part of the lift	Rule	What changes it	When to stop
Working phase	As fast as possible	Never slowed to add weight	Speed gone: end the exercise
Return phase	Slow and controlled through the full range	Slower still when the joint is loaded at the end of its range	Control gone: end the exercise
Sets	Three per exercise	Fewer when the session follows a hard swim	Third set worse than the second: stop at two
Session length	Up to 45 minutes	Shorter, never longer	Time is up: end the session

Two Dry-Land Sessions

Session A uses weights: bench press, front squat, deadlift and weighted pull-ups. Three sets of each, lifted by the rule above.

Session B uses body weight. It opens with an assisted pull on wall bars: the swimmer holds the bars at chest height while a partner supports the ankles through both the lift and the lowering, which copies the shape of a full butterfly pull. The author rates this the most useful dry-land exercise for swimming. Then push-ups. Then jumping work: squat jumps, box jumps or standing broad jumps. Then core work. Three sets of each. A swimmer training alone replaces the assisted pull with pull-ups on a band, which the repetition rule below covers.

The number of repetitions is the feature that distinguishes strength work for swimming from strength work in general, and the answer to that question constitutes the single most useful element the reader can take from the guide. The reasoning by which it is determined proceeds from the demands of the race. The demand that swimming places on strength is the maintenance of a given force output for the duration of the distance, since a single maximal effort has no application in the race, and the number of times that output has to be produced is the number of strokes in the race, which is a quantity that can be counted. In the author's stroke, one 50 m length of breaststroke is covered in an average of 15 stroke cycles, the underwater pull-out after the start and after each turn being excluded from the count. A race over 200 m therefore contains about 60 cycles, and the target of the gym work becomes the capacity to maintain force output over 60 repetitions of the pull and 60 of the push.

The target is then corrected for the exercise, because the load per repetition in a given exercise differs from the load per stroke in the water.

Table 4.2. Working out how many repetitions to do

Step	What to do	Example, 200 m breaststroke
1	Count the stroke cycles in one length, leaving out the pull-out	15 per 50 m
2	Multiply by the number of lengths in the race	$15 \times 4 = 60$ cycles
3	Use that as the repetition target in the gym	60 repetitions
4	Adjust for how heavy each repetition is	A pull-up loads far more per repetition than one breaststroke pull, so the pull-up count is lower
5	If the count is still out of reach, make the exercise easier and keep the count	A resistance band on pull-ups brings the count back up
6	Count again at the start of each training block	The stroke count changes as technique changes

Source: the author's method. The same rule applies to pull-ups, squats and loaded exercises.

The method is independent of distance. A swimmer preparing 100 m breaststroke counts about 30 cycles and trains to that figure, and the number in every case is derived from the race and from nothing outside it.

When the target is out of reach at the start, three routes are available, and the choice belongs to the swimmer.

- Start with a higher resistance and a lower count, and add repetitions over the weeks.
- Start at the target count with a light resistance, and add load over the weeks.
- Pick a resistance-to-count ratio that feels workable and progress from there.

None of the three routes takes precedence over the others. The author's criterion for the choice between them is the perception of how the load settles on the body, a judgement available to the swimmer alone, and the guide does not substitute a rule for it. Published guidance places the floor for untrained lifters at about 50 to 60 per cent of a one-repetition maximum (Wirth et al., 2022), and a swimmer whose chosen route settles well below that level is performing tone work. In the first month, gym work directed at muscle tone alone is an acceptable outcome of any of the three routes, and from the second month the target count assumes control of the progression.

The rule counts repetitions for a practical reason. A returning adult possesses no tested one-repetition maximum and has no reason to obtain one, whereas the counting of strokes over a single length is completed within one ordinary training day and requires no equipment. The wider research on strength training for endurance athletes addresses a different question, that of the transfer of strength gains into economy of movement, both in running (Blagrove et al., 2017) and in the early work on dry-land resistance training for competitive swimmers (Tanaka et al., 1993), and it leaves the question of repetition number open.

Recovery between Sessions

Recovery in this plan is understood as a set of activities that extends beyond the absence of training, and it comprises the joint work described in 2.3, sleep, and the two lighter sessions of the week, whose function in the model is as much the protection of the two hard sessions as the training effect of their own content.

The accumulation of fatigue is detectable without instrumentation, and each of its signs has an action attached to it.

Table 4.3. Built-up tiredness: the sign, what it means, what to do

What the swimmer sees	What it means	What to do
Threshold pace two seconds per 50 slower on the same interval, twice running	The week is not being recovered from	Hold the distance and swim the sprint session easy for one week
No speed in the first gym set	Not enough recovery since the last session	End the session and push the next gym day back by one day
Morning stiffness in a joint that has not gone by session time	The joint is taking more than it can handle	Drop kick work. Keep pull and easy swimming
Broken sleep after hard sessions	The overall load is too high	Drop one session from the week, keep the threshold swim
No wish to train for more than a few days	Load	Take a full week at half distance. The steps in 2.4 are not affected

Source: the author's criteria.

The first of these signs is the most useful, because it is a number that requires no judgement of feel, and because Chapter 3 produces it at every threshold session in any case.

Where swimming and gym work come into conflict, the gym gives way. Swimming is the activity for which the comeback is undertaken, and it is the load from which the body has been absent for the longest period, so that its capacity for that load is the one in greatest need of restoration. A swimmer who resolves the conflict in the opposite direction finishes the season stronger in the gym and unchanged in the pool.

Aches during a comeback are ordinary events, given the prevalence of pain in the masters population documented in 1.1 and the epidemiology of swimming injuries in general (Trinidad et al., 2020), and they are to be treated as information about the state of the load. The actions listed in Table 4.3 are inexpensive, and the injury they are designed to prevent is not.

CHAPTER 5. RACING AND TRACKING PROGRESS

The Meet as the Reference Point

The author's position on the first race departs from common practice, and it is stated here as a substantive element of the method. He does not wait until he feels ready. He selects the meet, plans backwards from its date, and races in whatever condition he has reached by that date, a procedure that was followed at his most recent start as well, when the entry was made without a sense of full readiness and the race was swum.

The conventional sequence, in which training continues until fitness is judged adequate and a race is then sought, offers the returning adult no point of exit, because the standard against which readiness is judged is a memory of how the body felt in the competitive years, and that memory is the one thing training has not restored. Under those conditions the entry is postponed from one month to the next, and the training loses the purpose that gave it its structure.

Early competition performs two functions. It produces an official time against which all later races can be measured, and it reveals what training has not yet corrected, under the conditions in which the correction will be tested: at race speed, under the influence of nerves, and with the finish approaching. Neither function can be performed by a training set.

The decision to enter is therefore of an administrative kind. Find a date, send the entry, and count the taper in 5.2 backwards from it. One physical condition rules a swimmer out: ongoing joint pain that the actions in Table 4.3 have failed to clear.

Tapering into the Meet

The taper runs one and a half to two weeks. Distance comes down, and what remains moves closer to the race itself.

Table 5.1. The taper, week by week

When	Session distance	Main set	Sprint work	What stays
Before the taper	2,200 to 2,500 m	Threshold set, 10 to 16 × 50	8 × 25	The whole session
First taper week	1,500 to 2,000 m	Broken swims: 4 × 50, or 50 + 100 + 50, with 20 to 30 s rest	4 × 25	The shape of the session and the effort in the main set
Final week	1,500 to 2,000 m	Broken swims: 4 × 25 with 10 to 20 s rest	2 to 3 × 25	Race practice and the full warm-up

Source: the author's practice, as described in his own words.

Three elements carry the taper.

The first is the reduction of distance under a constant intensity. The threshold set is withdrawn and broken swims take its place, a broken swim being the race distance divided into parts with short rests between them and swum at race pace. A meta-analysis of tapering in endurance athletes (Wang et al., 2023) reached a corresponding conclusion across sports: tapers in which intensity was maintained improved time-trial performance, and tapers in which intensity was reduced did not. The published tapers included in that analysis reduced distance by 41 to 60 per cent over 8 to 14 days, and the author's reduction from 2,200 to 2,500 m to 1,500 to 2,000 m is smaller than that range. On the size of the reduction the plan and that research therefore disagree, and the disagreement is left unresolved. The eight to fourteen days correspond to the present taper, whereas the size of the reduction does not: the transition from 2,200 to 2,500 m to 1,500 to 2,000 m removes between a tenth and two fifths of the distance, and about a quarter when the midpoint of each range is taken, so that the present taper is the shallower of the two. The reason lies in the rule that follows, under which distance is adjusted by feel and a poor feel for the water raises it, which places a floor under the reduction that a fixed protocol does not possess. A swimmer who prefers the deeper reduction has published grounds for it, and the author's record supports his own figure only.

The second is the adjustment of distance by feel, in one direction only. Where the feel for the water is poor, the swimmer swims more. The taper is understood as a change in the content of training, and the loss of the feel for the water in the days before a race is a greater cost than the fatigue of a few additional hundred metres.

The third is the function of the broken swims as rehearsal. A swim of 50 + 100 + 50 with 20 to 30 seconds between the parts reproduces the shape of a 200 at race speed with the minimum of rest that makes race speed attainable. As the meet approaches, the parts and the rests are shortened together, so that the rehearsal is brought step by step closer to one continuous swim.

Stop rules for the taper. All three point in the same direction, toward doing less in preference to starting again. Race pace out of reach in the broken swims two sessions running: shorten the parts, keep the rests, and hold the lower distance. Joint pain during the taper: drop kick work from the remaining sessions, because the pull and the turns keep the feel of the race. A session that leaves the swimmer flat the next day: the taper is being swum too hard, so the swimmer needs to adjust the intensity. An easy swum taper session is preferred in this case, because its costs less than the fatigue it would carry into the meet.

What to Track

Write down three things after every session and every race: the result, how the body felt, and how the joints responded. A log that asks for more stops getting filled in.

Table 5.2. Progress log

Field	Entry
Date, pool type, SCY, SCM or LCM	
Session distance, or race distance	
Main set: what was swum, the interval, the times	
Pace held, and where it started slipping	
Heart rate between repeats, if measured	
Wellbeing the next morning	
Knee, shoulder: clear, stiff or painful	

The final time is the least informative entry in the log. The information on which a change in training can be based lies in the distribution of that time across the race, which the splits provide on the condition that the races compared were swum under comparable conditions.

The long-course results behind this guide illustrate the reading of a log. Two races in the same type of pool, in June and August of the same season, are set out in Table 5.3.

Table 5.3. Comparable long-course measurements, one season

Event	June 2026	August 2026	Change	Splits
100 breaststroke, LCM	1:07.72	1:05.57	-2.15 s	32.84 / 34.88 → 30.64 / 34.93
100 freestyle, LCM	56.04	53.89	-2.15 s	→ 26.23 / 27.66

Source: the author's competition results. The August swims are from the 2026 U.S. Masters Swimming Summer National Championship. The June measurements are recorded in his own results file without a meet name. Long-course values only: they are not compared with the yards results in Figure 5.1.

Both final times improved by the same amount, and the splits indicate where the improvement originated. Over 100 breaststroke the first 50 was 2.2 seconds faster, while the second 50 moved by five hundredths only, from 34.88 to 34.93. The diagnosis that follows is unambiguous: the early speed has been restored, and the capacity to hold it through the second half has not. The splits name the next object of training without any recourse to guesswork, and none of that would be visible in the finishing time alone.

The same pattern appears over the 200 in long course. The August 200 breaststroke of 2:21.40 was split 32.37 / 35.47 / 35.54 / 38.02. The middle two lengths hold within seven hundredths of a second of each other, and the final 50 gives back 2.5 seconds against that pair, so that the swimmer runs out of speed before the finish is reached. Chapter 3 is where that problem is discussed, and it remains an open problem in this preparation.

The short-course-yards season of the same year shows the other purpose a log serves, which is the shape of a season as distinct from a single swim.

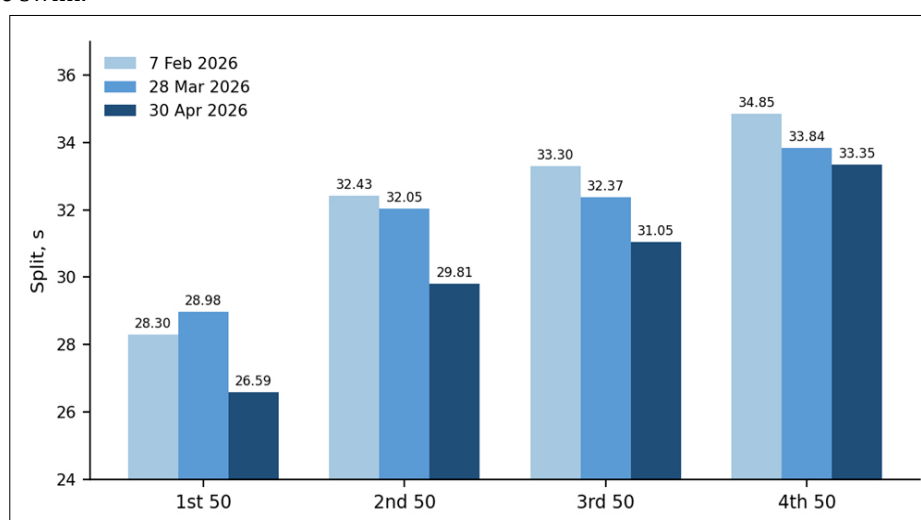


Figure 5.1. 200-yard breaststroke, splits by 50 across the 2026 short-course-yards season. Source: the author's competition results. Yards only, not comparable with the long-course values in Table 5.3.*

Across three meets in a 25-yard pool the 200-yard breaststroke went 2:08.88, then 2:07.24, then 2:00.80, and almost the whole of the final step came from the front of the race. In comparison with the March swim, the first three fifties were faster by 2.39, 2.24 and 1.32 seconds, and the final fifty by 0.49 only. A log kept for a single meet cannot display that pattern, whereas a log kept for a season displays it without any calculation.

The reading of splits in this manner is supported by the regularity of pacing in the population. Pacing over 100 and 200 m breaststroke has been shown to be stable enough across world-class age-group swimmers (Moser et al., 2020) for a departure from a swimmer's own established pattern to be interpretable, and the analysis of lap times is established practice in competitive swimming for the same reason (Robertson et al., 2009; Gonjo & Olstad, 2020).

Two rules apply to every line in the log. A yards time and a meters time should not be compared. A time converted from one to the other is labelled as converted whenever it appears. And nothing in the log proves a record. It supports comparison against the swimmer's own past times.

Typical Mistakes of the Return

The mistakes collected in Table 5.4 are those which the author observed in his own return or which recur in adult groups, and each of them is accompanied by the sign through which it is recognised and by the correction that the preceding chapters provide.

Table 5.4. Mistakes, how to spot them, and how to fix them

Mistake	How it shows	The fix
Pushing the distance	Moving up a step every week whatever the body says. Flat two days after each hard session	Go back a step. Move up on the sign in 2.4
Copying the old training	A week that looks like the old competitive one: big distances, two sessions a day	Rebuild from Table 2.3. The old week is background
Treating the warm-up as optional	Threshold pace down on the same interval. Knee sore the next morning	Restore the full warm-up, joints first, 3.1
Not entering a race	Training with no end point. The entry keeps being pushed back	Enter a meet and count the taper back from it, 5.1
Reading only the finish time	A season of results with no splits written down	Fill in the splits row of Table 5.2 at every meet
Settling a swim-gym clash in favour of the gym	Gym numbers rising while swimming stands still	Apply the rule in 4.3: the gym gives way
Chasing flexibility where keeping it was the task	Joint work forced. Pain ignored	Return to the maintenance amounts in 2.3. Support first, range second

CONCLUSION

The plan described in this guide rests upon a single exchange. The returning adult gives up distance, from which the body no longer recovers and for which the day no longer has room, and receives in return the thing that distance was always intended to purchase, which is a sequence of hard sessions each of which is performed on a rested body. Every practical rule in the preceding chapters is a consequence of that exchange. The week contains two costly sessions because two is the number from which the swimmer recovers. The session is terminated at a set distance because the recovery beyond that point has already been allocated to the next session. Gym repetitions are derived from the stroke count of the race because the task of the gym is the maintenance of force over a distance. The taper reduces volume and preserves effort because the volume was never the part of the training that produced the result.

The exchange is made possible by technique. A swimmer who was once trained to competitive level places a skill that survived the interruption on top of an engine that contracted during it, and the first month is perceived as longer than the task it accomplishes.

The limitations of the plan are specific, and they are placed here in front of the tables.

The plan assumes the swimmer already has technique. An adult beginner, or a swimmer whose stroke was never built, needs technical coaching that this guide does not contain, and a four-session week cannot compensate for a stroke that is absent.

The knee warnings are breaststroke warnings. A returning freestyler or backstroker takes the week and the session shape as they are and swaps the joint priorities for the

ones the stroke calls for, which for most strokes means the shoulder.

The swimmer needs a basic level of skill with a pace clock and a log: reading splits and writing them down. Without that the signs in 2.4 and 3.3 have nothing to work on, and the plan falls back to swimming by feel alone.

A little equipment is needed: a pace clock, a kickboard, a pull buoy, access to a gym, and a wrist heart-rate monitor for the one measurement in 3.3. Without them the rules for moving up have nothing to measure with.

Any ongoing joint or heart problem is a matter for a doctor, and no part of this guide replaces that judgement.

The amounts come from one swimmer over one comeback and carry that label throughout. They have not been tested against a control group, across a squad, or in other strokes. The guide offers a plan with its amounts written down, and it claims no proven effect.

What each reader takes from the guide differs. A returning swimmer receives a first month that does not injure him and a week that can be repeated throughout the season. A masters competitor receives the two instruments that convert training into a result, the interval rule in Table 3.2 and the taper in Table 5.1. A coach with an adult group receives two things in turn: Table 2.4 supplies the rules for fitting the week to each person, which is where most of the difference between adults lies, and Table 5.4 lists the mistakes on which most of the correcting time will be spent.

Three questions remain open. The criterion for the increase of load consists at present of one measurement and one honest judgement, and a wrist monitor that recorded heart rate across an entire session would supply that judgement

with data the swimmer already carries. The repetition rule of 4.2 has been formulated from breaststroke stroke counts and awaits the corresponding counts in the other strokes. And the pattern that the splits continue to display, a first half that has been restored and a second half that has not, is the unresolved problem of the preparation behind this guide,

and the work on it belongs in the threshold set. The research on the effect of age on masters breaststroke performance (Knechtle et al., 2025) indicates that this is the part of the race on which a returning swimmer should expect to work for the longest time.

Table C.1 puts the whole plan on one page.

Table C.1. The plan on one page

The week	2 swims, 2 gym sessions, stretching in between. Costly and lighter sessions alternate. Cut in this order: bodyweight, then sprint swim. The threshold swim stays
The session	Warm-up, joints first, then 8 × 25 technique, then pre-set 8/6/4 × 50, then main set, then 200 to 400 m easy
Threshold set	10 to 16 × 50. Rest = swim time × 1.25 to 1.3. Times slip about 2 s across the set, and slip late
Sprint set	8 × 25 flat out, full rest. Speed gone: end the set
Gym	2 sessions, under 45 min, 3 sets. Fast up, controlled down. Repetitions = stroke cycles in the race. Speed gone: stop
Stretching	Muscles daily. Joints 5 to 10 min every other day, support set up before the range is pushed. Never forced
Distance	1,200 to 1,500 to 1,800 to 2,000 to 2,200 to 2,500 m. Move up when something is left in the tank. Limit 2,500 m
Effort	When heart rate stops reaching the threshold zone on the last repeats, lengthen the set or update the target times
The race	The date comes first. Taper 10 to 14 days: distance to 1,500 to 2,000 m, effort held, threshold sets become broken swims
The log	Result, how it felt, how the joints answered. Splits at every meet. Pool type on every line. Yards and metres kept apart

APPENDIX. COPY-READY FORMS

The four forms below are the parts of the guide meant to leave the page. Each is designed to be printed on its own and kept with the training log.

Form A. Baseline Record

Filled once, before the first session. Read again after three and six months. Instructions in 1.2.

Item	Entry
Date of first session	
Years since regular training	
Best known times, with pool type, SCY, SCM or LCM	
Comfortable continuous swim, metres	
Knee: full flexion under load, painless, restricted or painful	
Ankle and hip mobility as it feels today	
Medical screening completed	
Training time available per week	
Target meet and date	

Form B. Entry Checklist, Weeks 1 to 4

Full version with the failure branches in 1.4.

Check	Done
Medical screening considered, Form A filled	
Weekly time budget fixed, template chosen from Table 2.4	
Week 1 held to 25 m sprints only, no timed trial	
Session volume held at 1,200 m through weeks 1 to 4	
Equipment limited to kickboard and pull buoy	
Dry-land at two sessions, or tone work	
Morning-after check on knee and shoulder recorded daily	
Meet identified and entered by the end of week 4	

Form C. Progress Log

One row per session, one row per race. The pool-type field is filled every time.

Date	Pool	Distance or race	Main set, interval	Splits	Pace, where it slipped	HR between repeats	Next morning	Knee, shoulder

Form D. Interval Conversion Card

The rule: **rest = swim time × 1.25 to 1.3. The interval is the swim time plus that rest.** Use 1.3 at the start, and move to 1.25 once the set is easy to repeat. Worked through in 3.3.

Pace held per 50	Rest × 1.25	Rest × 1.3	Interval on the clock
30 s	38 s	39 s	1'10"
35 s	44 s	46 s	1'20"
40 s	50 s	52 s	1'30"
45 s	56 s	59 s	1'45"
50 s	63 s	65 s	1'55"
55 s	69 s	72 s	2'05"
60 s	75 s	78 s	2'15"

Glossary

Plain definitions of the swimming and training terms used in this guide. Each term is also explained where it first appears in the text.

Term	What it means here
Broken swim	The race distance split into parts with short rests between them, swum at race pace. Used in the taper to rehearse the race without swimming it whole
Drill	A simplified exercise that isolates one part of the stroke, such as the kick or the pull, so that it can be worked on by itself
Interval	The total time allowed for one repeat: the swim plus the rest that follows it. A 50 swum in 40 s on a 1'30" interval leaves 50 s of rest. Some coaches call this the send-off or the regime
Kickboard	A float held in the hands so the arms rest while the legs work
LCM	Long course metres: a 50-metre pool
Masters	Adults who train and race in age groups, from 25 upwards in most federations
One-repetition maximum, 1RM	The heaviest weight a person can lift once. Used in published guidance to describe how heavy a gym exercise is
Pre-set	The set between the drills and the main set. It lifts heart rate and joins the stroke together. Sometimes called a build-up set
Pull buoy	A float held between the thighs so the legs rest while the arms work
Pull-out	The underwater stroke taken after the start and after each turn in breaststroke. Left out of the stroke-cycle count in this guide
SCM	Short course metres: a 25-metre pool
SCY	Short course yards: a 25-yard pool, common in the United States. Times in yards and times in metres are kept apart
Split	The time for one part of a race, as a rule one length or one 50
Stroke cycle	One complete pull and kick. Counting cycles across a race gives the repetition target for gym work, 4.2
Taper	The one and a half to two weeks placed just before a race. Distance comes down and effort stays up
Threshold	The hardest effort a swimmer can hold across a long series without the stroke falling apart. The threshold set in 3.3 trains it

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