FINIS®

Reference Guide

TEMPO TRAINER PRO

A NOTE FROM
TIM ELSON, FINIS VICE PRESIDENT

The Tempo Trainer Pro (TTP) is a very popular, simple waterproof metronome that emits a beep corresponding to designated increments of time. When used correctly, the swimmer is capable of learning a consistent, rhythmic, evenly paced swimming style that carries over phenomenally to racing. The Tempo Trainer Pro has the ability to supplement the most creative and challenging workouts and help swimmers improve performance. We recognize that often the hardest part of using this device is getting started with some specific workouts. In this reference guide, we hope to offer some advice and insight from some well respected swimming minds to fully explain this device and its optimal use.

Years ago in the swimming world, maximizing your distance per stroke (DPS) used to be the real buzz. In reality, DPS by itself doesn't mean anything – you can have the longest, most beautiful stroke in the world but that means nothing if you have a slow stroke rate. Therefore, the application of DPS and timing is critical to ensuring the continued success of the athletes.

There are infinite uses for the Tempo Trainer Pro and we are bombarded with new suggestions for implementing this product almost every single day. That is both exciting and encouraging to those of us at FINIS as we realize that the potential for a tool that allows the user to find their optimum balance of stroke rate and stroke length is truly limitless.

Thank you for your interest in the FINIS Tempo Trainer Pro. If you wish to know more about this device or any information that is shared in this booklet, I can be contacted directly at (925) 273-0974.

Warm Regards,

Tim Elson
Vice President

FEATURES & BENEFITS

CONVENIENT SIZE
Easily placed under a swim cap or goggle strap

3 MODES
Single beep, triple beep, strokes/strides per minute
More detail on next page

SYNC BUTTON
Synchronize the device to a pace clock or stop watch

ADJUSTABLE
Tempo can be adjusted by 1/100 of a second

MULTI SPORT
Applicable for swimming, biking, running, & more

AUDIBLE BEEP
Loud enough to hear in and out of the water
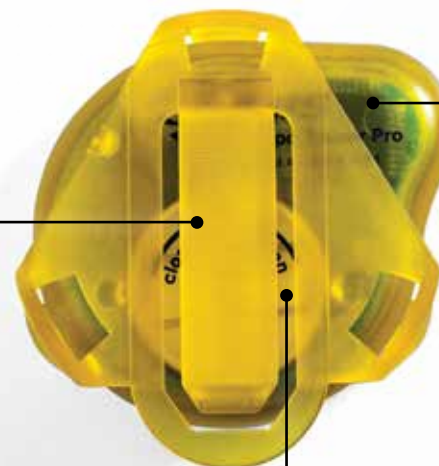
PERFECT FOR PACING
Consistent stroke tempo eliminates lulls in races or workouts

DRYLAND CLIP
Use removeable clip to secure to clothing

REPLACEABLE BATTERY
Allows for an extended life

3 MODES + SETS
LEARNING THE BASICS

SYNC BUTTON

In any Mode, you can reset the tempo and synchronize the device with a pace clock or interval by pressing the Sync Button.

MODE 1

Mode 1 on the Tempo Trainer Pro allows the user to set a pace using a very finite amount of time, down to one hundredth of a second. These small changes in tempo can translate into big changes in stroke length and efficiency over time.

SAMPLE SETS:

> 1 x 25 Freestyle, with the Tempo Trainer Pro set at 0.40 seconds in Mode 1. This means that every four tenths of a second, your hand will hit the water. For most people this will be a high turn-over.
>
> 1 x 25 Freestyle, set at 0.80 seconds. You will be amazed at how much slower and longer eight tenths of a second will feel. Reach and rotate with good DPS. Now that you have established both ends of the spectrum, you will want to find that ideal setting where you are most efficient.
>
> 1 x 25 Freestyle, set at 0.42 seconds. Then 1 x 25 Freestyle, set at 0.78 seconds.
>
> Continue the pattern of adding and subtracting 2 one-hundredths of a second per 25yd repeat. At some setting you will find the perfect combination of stroke rate and DPS that will elevate the quality of your swimming. This setting should also be your fastest 25.
>
> Set your TTP to 0.45. Kick dolphin kick at this rate. Keep an even tempo while trying to kick evenly in both directions. The majority of swimmers do not put enough emphasis on the up phase of the underwater fly kick; this drill will help to train that motion and will also strengthen the core and legs. The Foil Monofin is an excellent complement to this drill.

MODE 2

Mode 2 is most commonly used as a pacing tool, as it uses full seconds rather than fractions of time. Use this Mode on longer swims to keep pace or during sprint sets to determine goal bench-marks. Mode 2 has a range of one full second to 9 minutes 59 seconds.

SAMPLE SETS:

> Take advantage of Mode 2 and set the Tempo Trainer Pro for longer goal pacing. If you have a goal pace time of 1 minute per 100 yards, you can set the Tempo Trainer Pro to triple beep once every minute.
>
> To manage your pace even further, set the device to triple beep every 15 seconds so that you can hear if you are ahead or behind your goal pace at every 25 yard distance. This will teach your swimmers to pace and the correct way to build into their swim. Mode 2 is also extremely valuable for controlling pace and effort levels during a taper workout.

MODE 3

The third mode found on the Tempo Trainer Pro calculates stroke rate in numeric form. Enter the number of strokes your swimmer will be taking in one minute and the device will automatically calculate how often to beep at that rate.

SAMPLE SETS:

> Instruct your swimmers to set off using their desired stroke rate in Mode 3. Athletes should hold this pace for an extended period of time, anywhere from ten to thirty minutes. This will simulate a distance racing environment that is excellent for open water, triathletes, and those using an Endless Pool.
>
> When training for 200's of stroke, coaches typically prefer to practice pacing in smaller segments, such as repeated 50yd efforts. Setting the stroke rate to the desired value for this set will allow your swimmer to focus on other aspects of the stroke, such as technique and feel.

USING CRITICAL SWIM SPEED (C.S.S.)

BY PAUL NEWSOME, OF SWIM SMOOTH

Featured author, Paul Newsome of Swim Smooth

127 athletes from the Swim Smooth Perth Squad were tested on January 13th, 2012 for their Critical Swim Speed (CSS) pace per 100m using the 400m and 200m Time Trial method first proposed in 1993 by Ginn. A 10 week CSS Development Program was designed and put in place with the view that it might be possible to improve the swimmer's performance by reducing the CSS time per 25m by 0.5% per week using the FINIS Tempo Trainer Pro to help control pacing accuracy for the incremental improvements proposed. The swimmers typically swam 2 to 3 times per week for 2.5km to 4km in a given session. One session per week was set aside to purely work on developing this aspect of their performance by adapting to progressively faster CSS times.

79% of the swimmers who were re-tested reduced their time. There was an average reduction in CSS pace by 3%, the greatest improvement being a whopping 14%!

We've been using the new FINIS Tempo Trainer Pro in our Swim Smooth Perth Fresh 'n' Fruity CSS sessions for the last five months to accurately gauge pacing over a set distance. The beep-ers are set to beep once every time you should be at each 25m mark, e.g. if you wanted to swim 1:40 per 100m, it should be set to beep every 25 seconds (4 x 25 seconds = 100 seconds = 1:40). Simple - you either stay with the pace or you don't - a little like the red World Record line at the Olympics overlaid to visually show how close to a new record a swimmer is - when you set off too fast it's likely you'll end up blowing up and the red line will get ahead of you. This is easily done if you're keen to improve or in a squad session fearing others will catch you up, but can have a very detrimental effect on your long-term improvement.

With the new Tempo Trainer Pro it has been possible to more accurately set the pace to be precise to 1/100th of a second, so as opposed to just full second increments being available (giving steps of 4" per 100m), we've been able to set paces to 0.04" per 100m accuracy! Amazing!

Your resultant CSS pace might at first glance appear a little easy for those of you with experience of interval training but remember that CSS is about a hard 1500m pace. Certainly you could swim quicker than CSS in an intervals session with lots of recovery but CSS sets should be performed with short recoveries so that the training effects are focused on the energy systems used in distance swimming, not sprinting.

Shown below are a couple key steps highlighting the ideal 10 week training workout.

> **STEP ONE:** Complete a 400m and 200m time trial in the pool you normally train in and then calculate your CSS starting pace using the calculator at www.swimsmooth.com/training or using the free Swimulator+ App by Steve Casson, Swim Smooth Certified Coach.

> **STEP TWO:** Calculate your 10 week CSS Progression using the spreadsheet at http://www.swimsmooth.com/pauls_images/CSS_Development.xlsx or simply reducing your 25m CSS target by 0.15s per week.

> **STEP THREE:** Choose one day each week from your 2-3 regular weekly sessions where you will train using your Tempo Trainer Pro. After a warm-up of 600m to 1000m including some drills and some short efforts to get the heart rate up, start the 6 to 10 x 100m "Control Set", i.e. holding each week's new CSS pace and taking 1 beep recovery between each interval. The challenge here is pacing these accurately as the pace will initially feel slightly too easy.

> **STEP FOUR:** In the second part of the main set, follow the sets below per week. These prove to be very challenging! *1.* 200m, 300m, 500m (all +2 beep recovery) *2.* 10 x 100m +10s recovery (i.e. 50% of one beep use the re-sync button to restart the Tempo Trainer after 10s rest) *3.* 2 x 500m + up to 3 beeps recovery (if you make the time!) *4.* 4 x 100m beating the beeper by 3s, 3 x 100m 4s faster, 2 x 100m 5s faster, 1 as hard as possible (all +2 beeps recovery) *5.* 1 x 1000m *6.* Repeat Week 1 but just 1 beep recovery *7.* 400m, 100m, 400m, 100m (all + 1 beep) *8.* 5 x 200m first two with 2 beeps recovery, last three with 1 beep recovery *9.* 400m, 300m, 200m, 100m (all + 2 beeps or whatever is remaining of 2 beeps if you fall behind) *10.* Repeat of last week but reverse order and only 1 beep recovery.

Keep in mind, you might swim more than this per week, but this represents the average volume/intensity of those swimmers tested in our squad. The key (as always!) is consistency - better to do the above every week for 10 weeks than starting off as a "hero" but then missing multiple sessions further through the program.

For more information on Paul Newsome's training program, please visit: www.swimsmooth.com

ONE TOOL – AND FIVE SETS
THAT WILL TRANSFORM YOUR SWIMMING
BY TERRY LAUGHLIN

I'm a confirmed minimalist when it comes to training tools. You'll never see me using a pull buoy, paddles or kickboard. However, I value one tool so highly that if I had to choose only one, it would be the Tempo Trainer (TT). Here's why I would even choose the TT over a pace clock or sports watch:

The TT focuses you. The audible beep keeps your attention on each stroke you take and helps banish distraction.

The TT improves your rhythm. Consistent rhythm is an essential skill of successful swimming. It's also the quality that harmonizes the various elements of the stroke.

The TT teaches unerring pace. Sense of pace is usually thought of as a trait you just have or acquire through endless repetition. The TT is a fast, and almost effortless, way to learn this critical skill. Just keep strokes per length (SPL) consistent and synchronized to the beep as you swim farther. If SPL and Tempo remain steady, so does pace.

The TT 'cracks the code' on speed. Save a stroke—or a few hundredths of a second in Tempo—you swim faster. Add a stroke to any length, you go slower. Pretty soon you have a constant, clear awareness that any pace is the certain product of a particular SPL and Tempo. Once you realize this you never again make the mistake of thinking that how fast you swim depends on how fast you stroke.

The TT teaches you to stay focused. Swimmers usually leave one end of the pool thinking mainly about getting to the other end. The TT teaches you to experience every length as a series of precisely-timed intervals (which you choose)-- each composed of 'consequential nanoseconds.' When you feel even a tiny stroke error you know in that instant, it will cost you an extra stroke—and extra second—when you reach the other end. You also learn that those tiny errors are almost always the result of a moment's inattention. This is powerful motivation to stay focused.

The TT lets you choose your speed with mathematical precision. First it gives you the physical ability to choose and improve your speed or pace. And that leads to the psychological sense that you do control that, which is priceless to confidence and motivation.

The TT emphasizes the benefits of training the nervous system. When practicing with the TT, you learn how quickly your nervous system can adapt to the right stimulus. Often you experience noticeable adaptation to a particular task (e.g. holding 15SPL @ 1.0 sec) in as little as 10 or 15 minutes. When you begin using it, you find yourself making thrilling progress in a week's time.

SAMPLE SETS:
These sets are from a practice I did in a 50-meter pool on Feb 23, 2010, and include the tempos I chose and the stroke counts that resulted. If you do them in a 25y/m pool so your stroke counts will be lower. You are welcome to cut the repeat distance in half if you wish. [I.E. Substitute 10 x 25 for 10 x 50, or 25+50+75+100 for 50+100+150+200.) You can set the tempo faster or slower as well.

› TASK #1: CONSTANT DISTANCE, INCREASE TEMPO: Stroking faster is the nearly universal response when swimmers try to swim faster. The problem with this response is that, as Stroke Rate increases, most swimmers mainly move **the water back**--instead of the body forward. They get more tired; they don't get faster. Elite swimmers have the rare ability to 'protect' Stroke Length as they increase Rate. This set teaches that pattern to your brain! The key is to focus keenly on minimizing increase in SPL as tempo increases.

Swim 10 x 50 @ 1.19-1.10. (I.E. Increase tempo by .01 each 50.) Rest 10 beeps between swims. Count strokes.

On this set I took 35 SPL @ 1.19 (45.3 sec) and 37 SPL @ 1.10 (44.0 sec). If I added one additional stroke, I'd have swum essentially the same time. If I'd added two more strokes I'd have swum slower – an all-too-common result when swimmers stroke faster. At 1.19 I had a pronounced sense of leisure in each stroke. As I increased tempo on each 50, I focused intently on feeling I still had plenty of time and ease on each stroke. The tiny .01 sec increment makes that easier to do. The change in tempo is considerable over 10 x 50, but by making incremental changes on each repeat, your nervous system can adapt more easily.

› TASK #2: CONSTANT TEMPO, INCREASE DISTANCE: This exercise is particularly valuable for distance swimming. The goal is to minimize change in average SPL. When I do this, a good outcome (in a 25y/m pool) is to hold increase in SPL to +2 over your count for the first length. A ninja-level outcome is to limit the increase to +1 in SPL.

Swim 50+100+150+200 @ 1.10. Rest 10-15-20-25 beeps between swims. Count strokes.

I started at 38 SPL and never exceeded 39 SPL. This means that my pace was almost the same on the 200 as on the 50. Here's how the TT imprints a valuable habit: When you swim for a while with a particular count - say 40 SPL in a 50m pool – you know the feel of 40 SPL. An SPL of 41 or 42 feels different.

On a set that combines stroke count and Tempo like this, your focus narrows to two objects: (i) the feel of each stroke at your desired SPL; and (ii) the beep.

Regardless of whether I'm swimming a single length, or four or 20 lengths in a row, my thoughts are only to maintain the efficient-stroking sensation and match it to the beep. The result is that I swim unerring and unvarying pace yet my thoughts never stray from the stroke I'm taking. The end of the set arrives. I haven't **tried** to maintain pace. And yet I have.

Any swimmer who can program themselves to swim this way, has a powerful tool. You can begin that neural and cognitive imprinting process with a relatively short set like this.

For more information on Terry Laughlin's training program as well as written and video training aids, please visit Total Immersion at: www.totalimmersion.net

REFERENCE CHARTS

BY ERNIE MAGLISCHO

Whether you're a swimmer or coach, these charts enable helpful, and instant guidelines for determining stroke rates of every event.

For additional information, please visit www.finisinc.com or refer to "Swimming Fastest", by Ernie Maglischo.

CHART 1

Showing the range of stroke rates for male and female World Class Swimmers in each competitive event.

CHART 1		
	MODE 3 STROKES / MIN	MODE 1 SEC / STROKE
WOMEN		
50 Free	60 - 65	.44 - .50
100 Free	53 - 56	.54 - .57
200 Free	48 - 54	.56 - .63
400/500 Free	42 - 55	.55 - .71
800/1000 Free	44 - 54	.56 - 68
100 Back	50 - 56	.54 - .60
200 Back	40 - 42	.71 - .75
100 Breast	47 - 53	1.13 - 1.28
200 Breast	34 - 45	1.33 - 1.76
100 Fly	52 - 56	1.07 - 1.15
200 Fly	45 - 54	1.11 - 1.33

CHART 1		
	MODE 3 STROKES / MIN	MODE 1 SEC / STROKE
MEN		
50 Free	56 - 67	.45 - .54
100 Free	50 - 56	.60 - .54
200 Free	43 - 51	.59 - .70
400/500 Free	38 - 46	.65 - .79
1500/1650 Free	39 - 43	.70 - .77
100 Back	48 - 53	.63 - .57
200 Back	42 - 44	.68 - .71
100 Breast	52 - 55	1.08 - 1.15
200 Breast	38 - 42	1.43 - 1.58
100 Fly	52 - 56	1.07 - 1.15
200 Fly	45 - 54	1.11 - 1.33

CHART 2

Standard stroke rates conversion table showing three different modes.

CHART 2		
MODE 3 STROKES / MIN	MODE 1 SEC / CYCLE	MODE 1 SEC / STROKE
20	3.00	1.50
21	2.86	1.43
22	2.73	1.36
23	2.61	1.30
24	2.50	1.25
25	2.40	1.20
26	2.31	1.15
27	2.22	1.11
28	2.14	1.07
29	2.07	1.03
30	2.00	1.00
31	1.94	0.97
32	1.88	0.94
33	1.82	0.91
34	1.76	0.88
35	1.71	0.86
36	1.67	0.83
37	1.62	0.81
38	1.58	0.79
39	1.54	0.77
40	1.50	0.75
41	1.46	0.73
42	1.43	0.71
43	1.40	0.70
44	1.36	0.68
45	1.33	0.67
46	1.30	0.65
47	1.28	0.64

CHART 2		
MODE 3 STROKES / MIN	MODE 1 SEC / CYCLE	MODE 1 SEC / STROKE
48	1.25	0.63
49	1.22	0.61
50	1.20	0.60
51	1.18	0.59
52	1.15	0.58
53	1.13	0.57
54	1.11	0.56
55	1.09	0.55
56	1.07	0.54
57	1.05	0.53
58	1.03	0.52
59	1.02	0.51
60	1.00	0.50
61	0.98	0.49
62	0.97	0.48
63	0.95	0.48
64	0.94	0.47
65	0.92	0.46
66	0.91	0.45
67	0.90	0.45
68	0.88	0.44
69	0.87	0.43
70	0.86	0.43
71	0.85	0.42
72	0.83	0.42
73	0.82	0.41
74	0.81	0.41
75	0.80	0.40

TESTIMONIALS

"I have been using the Tempo Trainer for a while now, and it has become an integral training tool for me. Being a sprinter, it is especially important for me to keep my stroke connected and having the ability to gauge my stroke rate with the Tempo Trainer Pro helps me accomplish that."

– Lara Jackson; American Record holder, 50 Freestyle

"Keeping a consistent stroke rate is a very important skill for open water swimmers, who must pace themselves for long periods of time without the feedback of a clock. Training extensively with a Tempo Trainer Pro helps open water swimmers develop an internal metronome and a stronger sense of pace. The Tempo Trainer Pro's third mode expresses tempo in a format more familiar to open water swimmers (strokes per minute) than the modes in the previous models of Tempo Trainer. The Tempo Trainer Pro is also very useful for working to increase cruising tempo or distance per stroke (DPS)."

– Mallory Mead, Open Water Champion

"The FINIS Tempo Trainer Pro is like my electronic training buddy when I am swimming solo. I like to use it to work on tempo then will switch to the timing mode to help me with pace work. It is a nice challenge to try to beat the beep!"

– Laurie Hug; former USAT Natl. Team member, USMS Lvl-3 coach

"One job of the coach is to help athletes find the optimum combination of stroke rate and stroke length that will allow them to swim at some desired speed with the least energy expenditure. Nevertheless, the range of differences is small enough to allow us to make generalizations concerning the best rates for each event."

– Ernie Maglischo, Author of "Swimming Fastest"

"Consistent pacing is extremely efficient and a lot less painful. Most of my athletes who race 5K's to Marathons use a cadence range of 90-100 or 0.67-0.61 on the Tempo Trainer Pro. A good way to get started is to set the Tempo Trainer at 0.67, then scroll up or down to find a pace you can maintain for the duration of your run. It's that simple."

– Michael Collins, Multisports Orange County, USA Triathlon Coach. www.MultiSportSOC.com

Available in over 65 countries

FINIS®

FINISinc.com

USA PHONE: 925.454.0011
EU PHONE: +359.2.936.86.36