

# SWIMMING SCIENCE BULLETIN

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## USRPT Training of a Club Squad at a UK Midlands ASA Swimming Club

By an ASA Level 2 Coach<sup>1</sup>

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## Overview of Swimmers and Environment

The Club Squad at a UK Midlands ASA Affiliated Swimming Club is an eclectic mix of swimmers aged 12 through 17 of varying abilities and motivations. The most able have qualified at UK Regional Competitions, the least able are unable to qualify for many Open Meets due to lack of or poor times. The swimmers have been deemed either too old or not committed enough by the powers that be in the club to swim in the main development squads.

In Appendix A I have given more details about the individual swimmers without naming names for personal protection purposes. I have included details so you can see the type of swimmers that make-up the squad.

The current pool time is limited to four sessions a week, all at 19:30 PM, of either 90 minutes or 120 minutes duration, totalling seven hours in all. On two nights the squad swims in a 20-yard pool and on the other two nights in a 25-yard pool. Due to sharing the pool with masters swimmers, often the squad numbering up to 16 swimmers is limited to three lanes. In reality, the average attendance hovers between 10 and 12, so numbers is not the main issue in planning sessions; it is the disparity in abilities that is the most difficult issue to overcome whilst still adhering to the principles of USRPT.

The 25-yard pool has two mobile pace clocks which need to be manually synchronised for one-length race-pace sets. The 20-yard pool only has a single manual pace-clock which makes it very difficult to do single length race-pace sets, as the swimmers cannot see the clock without twisting around. The clock is small so that some swimmers with vision difficulties cannot see it at all from the far end of the pool. So one length race-pace sets are not attempted in the 20-yard pool given the difficulties that arose in trying to do them on one occasion.

## Decision to Implement USRPT

As preparation, I fully read “*Swimming Pedagogy and a Curriculum For Stroke Development (Second Edition)*” (<http://brentrushall.com/pedagog/index.htm>) and “*A Swimming Technique Macrocycle*” (<http://brentrushall.com/macro/>) as well as “*Step-by-step USRPT Planning and Decision-Making Processes and Examples of USRPT Training Sessions, Microcycles, Macrocycles, and Technique Instruction - Version: 2.2*” (<http://coachsci.sdsu.edu/swim/bullets/47GUIDE.pdf>) and other literature. I also read a number of reviews of USRPT by various authors both in support and in critique. I was very excited by what I read and learnt. The things that led me to give USRPT a go were as follows:

- The variation in swimmers' abilities, short pools and limited lane-space meant that training with 100m or greater length swims would invariably lead to swimmers getting overtaken and therefore, continual swimming at these distances would be impossible. But with USRPT, the short length of the pools we had available could be turned from being a handicap to a benefit.
- The role of the Club Squad was really maintenance of fitness, but I believed that four sessions a week of dedicated training should be enough to improve swimmers' technique and fitness if properly focussed.
- I felt that the swimmers allocated to the Club Squad were being dealt a rough hand, as the then Head Coach (who has now left the club) appeared to have no interest in even

creating a programme for them. So, there was a certain element in me of wanting to “stick it to the man” when I said I would take on the squad.

- I liked the technique focus of USRPT.
- The maxim that to compete successfully at race-pace, you need to train at race-pace resounded fully with me.
- I had seen my own son swim year after year, miles after miles, and gain very little in terms of real progress, and I believed there had to be a better way.
- I like challenging the “norm”.

### **Approach to Implementing USRPT**

From reading the literature I knew there would have to be a “learning period” for me and the swimmers. We started implementing USRPT on January 10, 2017 in the Club Squad when the squad was formed, but I believe the first attempt at a true race-pace set was not swum until the January 24, 2017, two weeks later. By this time I had read “*A Swimming Technique Macrocycle*” and decided to implement the recommended Macro Cycle starting the following week. So in earnest we probably didn’t get going until January 30, 2017.

In addition to coaching I also decided to put myself through USRPT as I am a Masters swimmer although I never swam as a youngster. I believed that I should not be asking the swimmers to do anything I was not prepared to have a go at myself.

From reading the literature, I believed there were a number of things we had to get into place before we could really start to work with USRPT:

- We had to have a set of targeted races.
- We had to determine the current race-pace or personal best of each swimmer for the targeted races, as the majority of swimmers are poor attendees at Open Meets.
- Specific techniques amongst the lesser-ability swimmers had to improve, notably streamlining and turns.
- Reading the Pace Clock accurately to the second after completing a turn had to be practised.
- A way of keeping track of failures had to be recorded.
- The swimmers had to start to understand that sticking to the repetition times was more important than completing the target number of reps.

A number of tasks were done during the three weeks in January, when we were doing the preparatory work. Things we did were:

- Ran time-trials for the 200m Freestyle, 200m Backstroke, and 200m IM. These were done in the 25-yard pool and times adjusted for 25m pool times. We have also since run time-trials for 100m Freestyle, 100m Breaststroke, and 100m Butterfly.
- We had several sets swimming to a specific time, but not at race-pace, so that swimmers could practice reading the clock working out their next start time and working out when they needed to complete the repetition.
- I ordered waterproof paper and printed off recording grids (see Appendix B), so that swimmers could use a simple tally chart to keep track of where they were in a set. I took these sheets back with me after a set and recorded the information on a spreadsheet to

keep track of progress and to determine if a swimmer had improved, remained the same, got worse, or whether the result was indeterminate as suggested on page 1.13 of the “*Step-by-step USRPT planning and decision-making processes*”.

## Where We Are Now

The main targeted races for the squad were 200m Freestyle, 100m Freestyle, 100m Backstroke, 100m Breaststroke, and 100m Butterfly.

We have been doing the 200m Freestyle Race-pace set for eight weeks once or twice per week, so we have swum either 20 or 30 x 50-yard or 40-yard freestyle race-pace sets a total of 22 times. However, we only did the 30 x 20-yard or 25-yard Backstroke set seven times, the Breaststroke set four times, and the Butterfly Set just once. This is because we had only just achieved a level of skill on the latter two events in recent weeks whereupon I felt we could introduce those strokes. It proved to be popular with the swimmers (well at least Breaststroke was).

Now on Tuesday and Friday evenings in the 25-yard pool we do two race-pace sets. On Wednesday and Thursday evenings in the 20-yard pool we do one race-pace set (see below for example sets). We started initially with just a couple per week and increased to six per week. My aim was to get up to 10 per week (three on Tuesday and Friday, two on Wednesday and Thursday), but we are not at that level at the moment. I have just introduced an IM race-pace set based around the 200m IM.

The rest of the time in a set is filled with one or more of the following:

- Warm-up – mixed irrelevant swimming.
- Skill Sets where we practice skills (not drills) at race-pace, even though we may initially swim at a slower pace. Occasionally we use fins for butterfly skills, and we use the 1 Pull- 2 Kicks Drill for Breaststroke to help with separating arms from legs as well. That is the only drill we use.
- Recovery swimming, comprising mixed irrelevant swimming, after race-pace sets.
- Fun stuff (relays, water-polo, etc.).

## Example Sets

Below are examples of sets we are currently doing.

### Tuesday (120 minutes)

- Warm-up 500-600m Mixed Stroke (10 mins).
- Skill Set #1 (25-yd/50-yd reps starting slow building to race-pace) (~20 mins).
- USRPT Set #1 (~20 mins).
  - 20 x 50 yard FC with individual times.
- Recovery – Mixed slow swimming 300-400m (~ 10 mins).
- Skill Set #2 (25-yd/50-yd reps starting slow building to race-pace) (~30 mins).
- USRPT Set #2 (~20 mins).
  - 30 x 25-yard BK or 20 x 25-yard FL with individual times.
- Cool-down recovery swim/water polo/fun (~10 mins).

### Wednesday (90 minutes)

- Warm-up 500-600m Mixed Stroke (10 mins).
- Skill Set #1 (25-yd/50-yd reps starting slow building to race-pace) (~20 mins).
- USRPT Set #1 (~20 mins).
  - 20 x 40 yard BR or 20 x 40 yard FC with individual times.
- Recovery – Mixed slow swimming 300-400m (~ 10 mins).
- Skill Set # 2 (25-yd/50-yd reps starting slow building to race-pace) (~20 mins).
- Cool-down recovery swim/water polo/fun (~ 10 mins).

### Cycle and Swim Timings

We have a wide variety of swimming abilities and only three lanes often to swim in, so sticking to the 20-second recovery “rule” is quite hard, however I believe the results achieved in a short period of time indicate that as long as you get it as close as you are able, USRPT works!

Currently for our 20 x 50-yard race-pace set our timings are, as at end of March:

Name (see Appendix A for Swimmer Profile)	SWIM	CYCLE	Notes	Target First Failure
Swimmer F1	00:35.0	00:55.0	Every 5th one 00:34.0	
Swimmer M6	00:36.0	00:55.0	Every 4th & 5th 00:35.0	10
Swimmer M1	00:37.0	00:55.0		11
Swimmer F8	00:37.0	00:55.0		16
Swimmer M2	00:41.0	00:55.0		15
Swimmer F5	00:37.0	01:00.0		8
Swimmer F3	00:39.0	01:00.0	Every 4th & 5th 00:38.0	8
Swimmer M5	00:41.0	01:00.0		20
Swimmer M4	00:41.0	01:00.0		11
Swimmer M3	00:41.0	01:00.0		19
Swimmer F6	00:43.0	01:00.0		
Swimmer M7	00:44.0	01:00.0		18
Swimmer F4	00:25.0	01:00.0	1 Length Swim	
Swimmer F7	00:22.0	01:00.0	1 Length Swim	

You will see that I was not able to keep strictly to the 20-second rule, but I tried my best to not extend beyond 24 seconds of rest.

You will notice that I have set some swimmers varying times to achieve. This is because when swimmers had achieved all their reps at least twice, I dropped the race-pace time down by a second. Nearly all struggled to make even five reps and subsequently got very despondent. Therefore, I was concerned that because of the small amount of time they spent training (only seven hours across four sessions) and the small amount of race-pace repetitions they were achieving, that if they continued at this rate their fitness would drop and also they would become discouraged.

Therefore I adopted a “Step Approach” whereby if they achieved all the repetitions twice in a row, I then applied the following progression to them to move them up to try to ensure they complete at least 12 reps (approaching 300% of a 200m Freestyle race) at the new pace:

- Every fifth repetition, one second faster than the set-time. If they failed to hit the one-second faster but they hit the set-time, they could carry on. Once this was achieved 100%, then ...
- Every fourth and fifth repetition, swim one second faster than the set-time. If they failed to hit the one-second faster but they hit the set-time, they could carry on. Once this was achieved 100%, then ...
- Every third, fourth, and fifth repetition, swim one second faster than the set-time. If they failed to hit the one-second faster but they hit the set-time, they could carry on. Once this was achieved 100%, then the swimmer could definitely do 12 repetitions at the faster time.
- Move up to all repetitions to being one-second faster than the set-time and work towards completing all repetitions at the new pace.

The author has corresponded with Professor Brent Rushall and he confirms that this approach is sensible and in keeping with USRPT bearing in mind the severe limitations under which we are working.

The swimming levels of swimmers F4 and F7 were such that they lagged behind the rest of the group, and therefore I moved them onto one-length swims, otherwise they would not get even 15 seconds of rest between reps. By doing one length, they were not adhering to the 20-second rule, but I believed they would hopefully be less discouraged and be able to improve technique at pace to start to catch up to the required performance standard. Again Professor Rushall has confirmed that this was a sensible approach and recent improvements in training and set completion seem to indicate it was indeed the right move.

## **The Difficulties**

As with all new ventures, nothing is perfect.

- It has been hard to get the right timings for the swimmers without actual Personal Bests to ensure that they do enough reps to get the training benefit but not be able to complete the set.
- It has been hard to move the swimmers' and my mind-sets from “do all the reps” to “get the times”.
- Once they failed a couple of times, some swimmers became despondent and just gave up.
- Getting the swimmers to focus on a technical aspect whilst trying to make the times was nearly impossible at first.
- Ensuring lane discipline so that one swimmer did not block the view of the clock from another was hard to get started.
- Keeping two clocks manually synchronised to allow one length race-pace sets was hard.
- It is a lot of work keeping records and re-calculating race-pace set times initially to try to find the optimal training time.
- It has been hard for me to “unlearn” covering too many things at once and trying to focus the swimmers only on one aspect.

- It was hard for me to drop drills and equipment usage in favour of practicing full-strokes the majority of the time.
- Moving swimmers “up” once they completed all reps in a set presented a problem, as a one-second drop in a 40- or 50-yard swim is a big ask (see above “Step Approach”).
- Technically poor swimmers, who are unable to learn or unwilling to learn quickly, struggled to do well in the early race-pace sets and generally did not abide by the “rules” of USRPT.

## **The Benefits**

The benefits of USRPT have easily outweighed the difficulties.

- Implementing the Technique Macrocycle (a crucial part of USRPT in my opinion) enormously improved swimmers' technical ability. The speed of turns and speed of swims by some Club Squad swimmers at a recent local league meet were singled out for especial praise by other coaches.
- Swimmers really enjoy the training, especially the recovery after a race-pace set, when I let them pretty much do what they want!
- Even after this small time, those that have competed at meets have all experienced small or large improvements in Personal Best times with the targeted swims or swims of the same stroke as targeted swims. Appendix C gives the times swum at a 200 yard Freestyle Time Trial on January 10, 2017 and those swum at a time-trial on April 4, 2017 (12 weeks after approximately 8-9 weeks of actual USRPT).
- Once into a routine, planning sets became very easy and is now a weekly process I can finish in about 2-3 hours.
- The swimmers are rising to the challenge of having a goal for each set every session.
- The swimmers easily adapted to running their own sets, dispelling my fears that this would be the biggest challenge.
- Those swimmers with a history of medical/joint/muscle issues have been able to complete training and most race-pace sets without complaint.
- Virtually no incidents of swimmers cramping-up, except when we occasionally use “toys” like fins.
- Swimmers understand that there is a plan and what each Microcycle week is about.
- Narrowed focus during skill-sets is noticeable and also now during race-pace sets.
- Competition briefings have become simple, as I just tell the swimmers to do what they do in training. They already inherently understand what is required of them, technically as well as in terms of effort.

## **Personal Swimming**

It may be recalled that I am putting myself through USRPT in my own swimming. What have been the results for me?

In a recent masters meet in the UK after 10 weeks of USRPT I recorded a 4-second improvement over my most recent 200m Front Crawl time, a life-time personal best at masters meets. I also recorded a lifetime personal best for 100m Breaststroke, and 100m Individual Medley. In short, after several years of slow decline with Traditional Training, I am confident in my ability to now improve my times with USRPT even at the age of 55. This type of training is for everyone.

## **USRPT versus Traditional Training**

Throughout this document I did not mean to imply that Traditional Training does not work. It plainly does, but the improvements I have seen in technique and conditioning have come far more rapidly using USRPT than I have ever seen throughout my five years of coaching Traditional Training. For swimmers who have small amounts of pool time and are of a “lower ability”, this type of training has done more to boost their confidence and enthusiasm as well as their performance than anything I have seen previously.

The most satisfying aspect I have experienced is seeing my swimmers swim exactly the same in a race as they do in training, something I’ve not experienced before, and this alone makes it all worthwhile.

### **Forget the Yardage!**

Never, ever sacrifice technical focus for yardage. I have stopped race-pace sets for certain swimmers if I can see they are struggling technically. Also do not be tempted to keep the swimmers moving the whole session, especially after a race-pace set. Let them calm down and recover, just float or scull if necessary.

Make sure you do any skill sets (not drills) between race-pace sets over one or two lengths only, building-up the pace so that they practice at full speed, but give the swimmers plenty of time to rest between repeats in these skills sets so that mental focus is not lost. There is no need to “do the yardage”. Race-pace sets are far more physically and mentally exhausting than any Traditional Training – if you don’t believe me, do a USRPT set yourself ...

### **Summary**

Now that I have been working with USRPT for three months, it has shown itself to be far simpler to comprehend than Traditional Training, with none of the inherent problems of the latter. It quickly gave me confidence to put together a full program to improve swimmers rapidly, both technically and physically, and it is a program which in theory has no upper limit. I am indebted to Professor Rushall for his pioneering work on this fantastic training methodology.

The simple maxims of “Technique is Paramount” and “To Learn to Swim at Race-pace You Need to Train at Race-pace” say it all. To any coaches or swimmers considering “trying” USRPT, don’t just “try” a few USRPT sets mixed in with Traditional Training. Properly study Professor Rushall’s literature with an inquiring mind, including his Swimming Pedagogy book. Thoroughly plan an introductory “phase” to teach yourself and your swimmers the necessary skills to work with USRPT. Introduce different types of race-pace sets gradually, but above all stick with it, as you will not be disappointed and neither will the swimmers!

## Appendix A: Swimmer Profiles

**Swimmer F1:** Female, 17 years-old, Regional\* Qualifying Swimmer two years ago, but has multiple growth issues around joints causing her to be unable to train for long periods under “traditional training”. Attends 3 out of 4 sessions. Excellent work ethic.

**Swimmer M1:** Male, 17 years-old, never qualified at County Level and often cannot make qualifying times for Open Meets. Attends about 2 out of 4 sessions. Average work ethic.

**Swimmer F2:** Female, 16 years-old, County Qualifying swimmer, severe shoulder issues and undergoing physiotherapy and acupuncture. Attends about 1 out of 4 sessions. Excellent work ethic.

**Swimmer F3:** Female, 16 years-old, never achieved a County Qualifying Time. Attends 3 out of 4 sessions. Excellent work ethic.

**Swimmer F4:** Female, 16 years-old, never achieved a County Time, severely intellectually disabled, looking to get categorized. Attends 4 out of 4 sessions. Excellent work ethic

**Swimmer M2:** Male, 16 years-old, never achieved a County Qualifying Time; transplant survivor. Attends 1 out of 4 sessions. Excellent work ethic.

**Swimmer F5:** Female, 15 years-old, County Qualifying swimmer. Swims nearly every session. Varying work ethic. Suspect this swimmer is a “Drop Dead” Sprinter as struggles with two-length sets.

**Swimmer F6:** Female, 15 years-old, late starter, never achieved a County Qualifying time; often cannot make qualifying times for Open Meets. Attends 4 out of 4 sessions. Excellent work ethic.

**Swimmer F7:** Female, 14 years-old, never achieved a County Qualifying time; often cannot make qualifying times for Open Meets. Attends 1 out of 4 sessions. Good work ethic.

**Swimmer M3:** Male, 14 years-old, never achieved a County Qualifying time; often cannot make qualifying times for Open Meets, has represented Club in lower-level League competitions. Attends 3 out of 4 sessions. Excellent work ethic.

**Swimmer M4:** Male, 14 years-old, never achieved a County Qualifying time; often cannot make qualifying times for Open Meets, has represented Club in lower-level League competitions. Attends 2 out of 4 sessions. Excellent work ethic.

**Swimmer M5:** Male, 14 years-old, never achieved a County Qualifying time; often cannot make qualifying times for Open Meets. Attends 3 out of 4 sessions. Excellent work ethic.

**Swimmer F8:** Female, 13 years-old, has achieved County Qualifying times and attends Open Meets. Attends 2 out of 4 sessions. Excellent work ethic.

**Swimmer M6:** Male, 12 years-old, has achieved County qualifying times, just missing out on Regional Qualification, and regularly attends Open Meets. Attends 4 out of 4 sessions. Excellent work ethic.

**Swimmer M7:** Male, 12 years-old, never achieved a County Qualifying time often cannot make qualifying times for Open Meets, has represented Club in lower-level League competitions. Attends 2 out of 4 sessions. Excellent work ethic.

\* *Hierarchy of competitions in the UK: Open Meets/Local Leagues -> County -> Regional -> National.*



## Appendix C: 200-yard Freestyle Time-trials

	10-Jan-17	04-Apr-17	Diff (+/-)	% Diff
Swimmer F1	02:30.31	02:19.36	00:11.0	7.3%
Swimmer F2**	02:21.00	02:21.00	00:00.0	0.0%
Swimmer F3	02:32.98	02:34.35	-00:01.37	0.9%
Swimmer F4	03:32.55	03:16.92	00:15.6	7.4%
Swimmer F5	02:19.91	02:23.42	-00:03.5	2.4%
Swimmer F6	03:12.60	02:52.24	00:20.4	10.6%
Swimmer F7	03:10.27	03:07.71	00:02.6	1.3%
Swimmer F8	02:27.28	02:24.83	00:02.5	1.7%
Swimmer M1*	02:21.00	02:14.18	00:06.8	4.8%
Swimmer M2	02:37.60	02:28.13	00:09.5	6.0%
Swimmer M3	02:41.44	02:33.02	00:08.4	5.2%
Swimmer M4	03:11.11	02:35.63	00:35.5	18.6%
Swimmer M5	02:52.16	02:37.36	00:14.8	8.6%
Swimmer M6	02:25.25	02:22.41	00:02.8	2.0%
Swimmer M7*	03:10.05	02:51.65	00:18.4	9.7%

\* Swimmer M1 and Swimmer M7 did not attend the second 200-yard FC time trial, so for the purposes of this report I have used a calculated time based upon a 100-yard FC time-trial completed at the start of March 2017.

\*\* Swimmer F2 only attends once per week on a Thursday and so I have no time-trial times for her.

### My Thoughts

The results for Swimmers F1, F6, and all male swimmers, bar M1 and M2, are as I would expect. All these swimmers work hard in the race-pace sets. Technically F6, M3, M4, M5, and M7 have improved the most and have responded the best to the Technique Macrocycle (changes are visibly obvious), and have also dropped in times on race-pace sets as well as in the time-trials.

I am pleased with Male Swimmer M2 because he does not attend practice much. Despite it being a calculated time, I am also pleased with Male Swimmer 1 because he does not attend much and has only an average work ethic (not bad, just the poorest of the group). Despite that his turns have improved immensely which has improved his times.

Swimmer F3 has dropped off in times, partly because she was ill and injured in the two weeks prior to the second time-trial. Also, she did not join the squad until the end of January, so her starting time was actually based on a previous PB. But most of all, she does not really apply herself to race-pace sets. I am sure it is in her head, because I have seen her on one occasion really apply herself and quite easily make the set, but ever since then has failed to match that performance.

Swimmer F5, has a good work ethic, lacks confidence, and I am convinced has a bit more in her. I am not too concerned about the drop-off, she has had exams and has missed quite a few training sessions in the last month, but she continues to train with vigour and I expect good results on the next time-trial.

Swimmer M6 is a very hard working swimmer and I believe is swimming close to his current limit at present, and the small improvement is in line with his performances at Galas.

Also, I am particularly pleased with Swimmer F1's improvement. She did not start out at anywhere near PB level due to long-term injuries and she is still nowhere near her best but she has been able to train far more regularly than previously allowed by traditional training.