

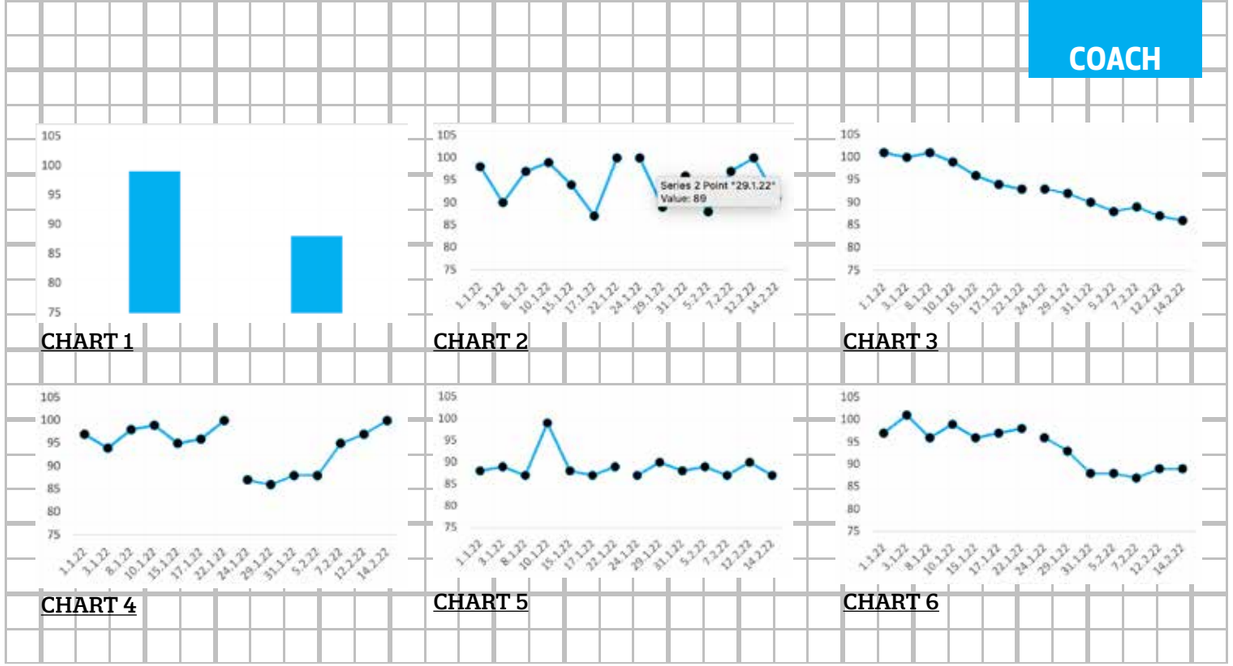
WHAT STORY DOES YOUR DATA TELL?

By Tracey Baumann and Emma Levy

Without the right data and analysis, how can you know that the changes you are making are driving you towards achieving your swimming goals? When we monitor our progress effectively through measurement, it can help maintain our motivation by making improvement visible as we work towards these goals. It's easy these days to gather data on our swimming, given everything a smart watch can tell us. But for any data to be useful, whether from our smart watch or another source, we need to have chosen the right measure, and then analyse our data in a way that will help us to make the best decisions about next steps.

Let's look at why it's important to tell a story with our data. Shona has introduced a change into her stroke technique, and she wants to find out if there's any improvement associated with that change. She is expecting the change she is working on to improve her efficiency, which will reduce her stroke count, so one measure she has chosen is strokes per 100m. To ensure that her stroke count isn't affected by varying tempo (the time it takes for a single stroke), for the swims where she collects her data she holds her tempo steady, using a tempo trainer, at 1.20 seconds per stroke. She swims in the same pool at the same time of day.

Chart 1 shows us one way we can look at Shona's data. In this chart, we have data from 2 weeks before she introduced the change (99 strokes), and 2 weeks after (88 strokes). What



does this chart seem to be telling us? Many people would look at this chart and say there is a clear improvement, that Shona has reduced her stroke count over 100m by 11 over this period.

Now let's look at the same data in a different way. In Chart 2, the horizontal axis shows the dates when Shona collected data, and the vertical axis is the measure: strokes per 100m. There is one data point for each date, which Shona calculated as the average of several 100m repeats. The red arrow indicates when Shona first made the change to her stroke technique. The green arrow indicates the number of strokes she would like to achieve consistently over 100m. The data point for 10th January is 99 strokes, and for 5th February is 88 strokes (the same as in Chart 1). What is this chart telling us? The stroke count went up and down at random both before the change and after the change. This indicates there was no improvement associated with the change.

Chart 3 is telling a different story. Again, the data point for 10th January is 99 strokes, and for 5th February is 88 strokes (the same as in Chart 1). There is a definite improvement through the period of the chart, but what might have caused it? Remember, what we are investigating is whether the change introduced in the middle of this period is associated with an improvement. The stroke count was clearly heading in the right direction, down, even before Shona made the change. So although it's possible that the change Shona made contributed to the ongoing improvement, we cannot be sure. We would need more information.

The story in Chart 4 is different again. Here Shona's stroke count seemed to improve initially, but it was not sustained. Again, the data point for 10th January is 99 strokes, and for 5th February is 88 strokes (the same as in Chart 1). A change in the data must be sustained over time for it to be an improvement. Here it was not sustained, so we cannot say that the change made an improvement. However, the chart does suggest that it would be helpful to continue to work with this change; we'll look in more detail at how we might do that in a future article.

In Chart 5, again the data point for 10th January is 99 strokes, and for 5th February is 88 strokes (the same as in Chart 1). Most of the variation between data points is random, but on 10th January something very different happened. The chart indicates no evidence of improvement associated with the change. However, Shona could learn something from the data on 10th January; if she finds out the reason for this outlier she can then make changes to prevent such a high stroke count from happening again.

What do you think happened in our last story, Chart 6? Again the data point for 10th January is 99 strokes, and for 5th February is 88 strokes (the same as in Chart 1). Here there was a definite improvement after Shona introduced the change, and she sustained it over the following few weeks. This certainly suggests that the improvement is associated with the change, but Shona cannot be sure from this data alone – she would need to check whether she had made any other changes over the same period that might have contributed to the reduced stroke count.

These are just some of the stories your data might tell. If we return to Chart 1, we can see that the immediate impression we get is not helpful. Any of the stories we tell with the other charts would produce the same 'before and after' chart. If Shona only compared 2 data points, one before and one after the change to her stroke technique, as in Chart 1, she would have no idea which of the stories applies to her data, so she could reach the wrong conclusion and choose next steps that are not helpful.

In a future article, we'll explore the options you have for action based on the story that your data tells. In the meantime, identify a change you have made or are planning to make to your stroke technique, choose a suitable measure, and either with data that you already have, or collecting new data, put it into a chart like these. What story does it tell?

EXPERT ADVICE

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