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Good as gold: Olympic athletes who couldn't make the cut today are quick enough for gold decades earlier

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This year's Olympic gold medallist in the men's 100m freestyle, Chinese swimmer Pan Zhanle. Another 19 swimmers in this year's event swam fast enough for gold at the 1996 event. Photo: AFP

When you reflect on Zoe Hobbs' achievement as the first Kiwi to run in an Olympic 100m sprint in nearly 50 years, also consider this: Zoe Hobbs ran fast enough to win gold at every Olympics until 1964.

The world's attention during the Olympics rightly falls on medalists - who is fastest, who is strongest, who can throw an object the furthest, who can leap the highest (assisted or unassisted).

But for every gold medalist, there are dozens of other athletes who have trained for years or even decades, who don't even make it past the preliminaries or heats.

While attention often falls on how gold medal times and Olympic records have progressed over the years, less attention is paid to how an entire field of athletes have also improved.

The data shows that even the lowest-ranked current Olympians are still easily outdoing the champions of Games gone by - sometimes well into the 20th century.

Some of the most remarkable heat times are set in swimming.

Nearly 80 athletes contested the men's 100m freestyle heats in Paris.

Of those, 20 swam fast enough to have won gold as recently as Atlanta 1996 - but with only 16 semi-final spots, not even all of them made it beyond this year's heats.

Olympic 100m sprinter Zoe Hobbs Photo: AAP/Photosport

Kiwi Olympian Moss Burmester came fourth in the men's 200m butterfly at the 2008 Beijing Games to the most decorated Olympian of all time, Michael Phelps.

Burmester - whose own times at that Olympics would still be competitive today - credits Phelps' use of the 'fish stroke' or dolphin kick underwater as a huge influence on swimming times in recent history.

"That's been a massive improvement or change - the actual turn and then a really quality underwater [phase]."

Sometimes an individual athlete can make such great strides in their sport that their competitors rise to the challenge, too.

"What shifts the ceiling of a sport or of certain events, is who's pushing the boundaries at a certain moment in time," Burmester says.

"Michael Phelps and Ryan Lochte, they really pushed their events a really long way... You get those people that end up competing in a certain event or era and it's very, very strong.

"I would say it's the same with [New Zealand swimmer] Erika [Fairweather] right now with the middle-distance freestyle - that 400 freestyle I think was the most competitive swimming event at the Olympics this time around."

Incremental tweaks to the equipment, such as adjustable starting blocks and the creation of a small ledge for back-strokers to start from, and even the pool itself - which is now much deeper, creating less wave movement - have helped everyone to improve their speeds, Burmester says.

He also points to the vast amounts of data now available.

"People don't see it, but there's guys sitting up in the very tops of the stands with cameras pointing down. They'll time the swimming part of the race; say from the five-metre flags to that 40-metre swimming part. Then they'll analyse the turn part: into the wall, out from the wall, the underwater distance, right out to the 15-metre mark," he says.

"So they can basically break down the race into all these mini-segments to see where people might be faster or slower than their competition."

High Performance Sport NZ's head of innovation, Simon Briscoe - who was previously a performance analyst - says that segmentation of a race has dramatically improved performances across a whole range of sports and distances.

"I didn't realise at all how ground-breaking Peter Snell and his training was at the time," Briscoe says.

"He was one of the first to really do the periodisation side of things - breaking his training down into components and focusing on speed and stamina as separate things."

He says speed itself is a "really hard thing to train", but there are lots of other areas where athletes can make progress.

The data from this year's Games show heat times in sprinting remain relatively lower compared to previous gold medal performances - potentially due to the different qualifying paths for swimming and sprinting.

In swimming, the fastest times across all heats advance to later rounds, whereas in sprinting, the top two or three from each heat are automatically qualified, regardless of their time relative to competitors in other heats.

While top-seeded swimmers will generally try to keep something in the tank during heats, that effect seems to be magnified for sprinters: their qualifying rules allow them to ease up in the final metres if they aren't going to be overrun by their competitors, and save some legs for the finals.

Even so, half the field are still loping to the finish line in times that would have astounded spectators in the 1960s and 70s.

Briscoe says the biggest step-changes through history have come not from increasing speed or strength but from "re-thinking the problem and trying to solve it in a better way than has been done previously".

Innovations such as the Fosbury flop, the rotational technique in throwing sports, and the tumble-turn in swimming are all classic examples, he says.

Briscoe and Burmester say aiming for particular milestones is counterproductive - both citing the four-minute mile.

"If you look at the rate of progression of times up to that having been broken and then after it, as soon as that mental barrier was broken, times started dropping much quicker after that," Briscoe says. "It's a fascinating example of how sometimes we can limit ourselves with our own thinking."

It turns out the 'Bannister effect' has been myth-busted: times stagnated during World War II and then began falling again - and neither Bannister nor his great rival John Landy thought it impossible at the time.

But Burmester - while repeating the myth - subscribes to precisely Roger Bannister's way of thinking.

"Personally, I don't think anything's impossible. I always think there's going to be slow, incremental improvements regardless.

"In my eyes [the four-minute mile] would have happened eventually - I wouldn't have written it off at the time."

The metric equivalent - running a sub-3m 42.22s 1500m - is now old hat. Every single heat participant in the men's 1500m this Olympics ran faster than that.

Aside from the big step-changes, Briscoe says future improvements will also largely come from small, continuous improvements, individualised to each athlete.

A huge part of that is training consistency, which professionalisation of both athletes and coaches has increasingly allowed over recent decades.

Nowadays, attention is also turning to injury prevention, Briscoe says.

"One of the biggest barriers to people keeping developing is that we get injuries and that holds people back, so being able to predict and manage injuries could be a massive step."

Burmester believes the quality of coaching is another underrated element.

"You look at Bob Bowman - he had Michael Phelps and now he's got [French swimmer] Leon Marchand.

"Good coaches will always create good programmes... There's definitely a connection there."

These days, Moss Burmester is a spectator too - and just as invested as the rest of us in who will push the boundaries of human physicality further than ever before.

"Of course - it's seeing athletes at the peak of their performance."

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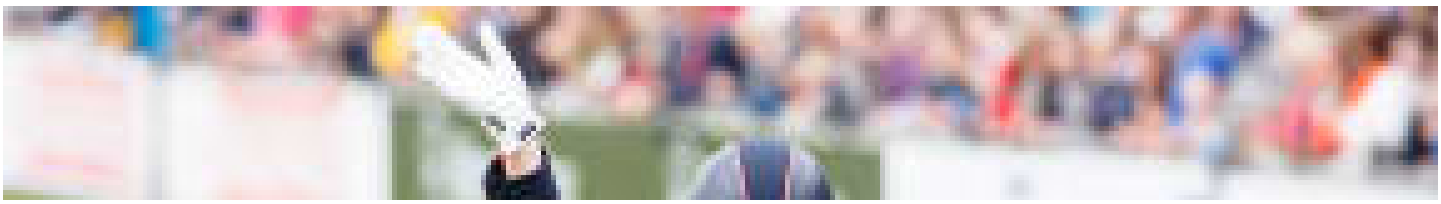

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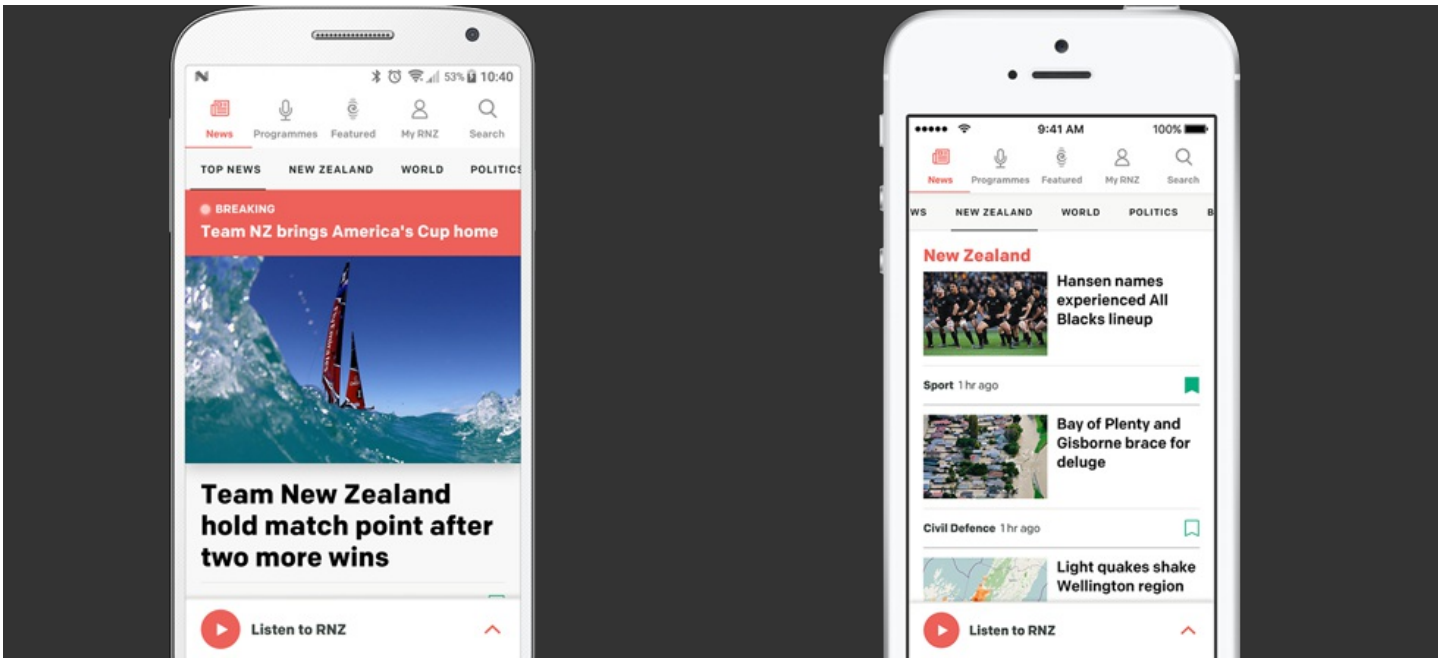

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