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Brace yourself for it: Virginia Tapscott experiments with bionic knee alternative to surgery

By VIRGINIA TAPSCOTT

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Virginia Tapscott

Virginia Tapscott keep her beach holiday plans intact, wearing a brace last summer.

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I finally did it. In December 2024 I joined the ranks of professional footballers by rupturing the dreaded anterior cruciate ligament.

“Complete disruption of the ACL,” the magnetic resonance imaging report read.

I guess netball is risky business at the best of times but it’s a ticking time bomb when you are 34 and play like a crazed border collie chasing a tennis ball. A devastating end to my social netball days but quite the lesson in New Age treatment of ligament injuries.

It turns out that, unless you play for the Matildas, the Christmas holiday period is a tough time to rustle up an appointment with an orthopaedic surgeon. Going under the knife also would have disrupted my beach holiday plans so I was, shall we say, receptive to alternative treatments. When my physiotherapist suggested that simply wearing a knee brace was having promising results in promoting spontaneous ACL repair, without the need for surgery, I thought it sounded too good to be true.

It wasn’t any old knee brace, though; it was a bionic knee. I was part robocop, part woman limping around in a bikini. The catch was this knee brace was permanently cocked at 150 degrees. A week later I found out I was supposed to be sleeping in the damn thing.

I had been prescribed a softcore version of the 90-degree Cross Bracing Protocol developed by Australian surgeons Mervyn Cross and his son, Tom Cross. This protocol started capturing widespread attention in 2014 when it was implemented in clinical trial settings. It turned out that immobilising a torn ACL at a right angle for four weeks, then gradually easing the leg back to straight, was remarkably effective at healing the torn ligament. The first trial included 80 patients and recorded a 90 per cent success rate.

It wasn’t a randomised control trial and the Cross Bracing Protocol naturally drew a fair amount of scepticism in a culture where surgery was commonly considered the only real option. But still, a 90 per cent success rate? It did make me wonder.

So anyway, grateful that my knee was only partially bent, I did my best Baywatch beach hop all the way through summer in a waterproof, German-engineered knee brace. I hoped I wasn’t making a huge mistake, though several people weren’t shy in sharing their belief that not having surgery was a special form of stupidity.

The brace kept the knee partially bent for four weeks.

On the upside, the knee brace got me chatting with more strangers than I ever thought possible. I couldn't go out for groceries without someone offering a helping hand, even if they did privately think I was stark-raving mad. Turns out there are a lot of people with dicky knees getting around who know what it's like to be on the mend.

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The surgeon's office called me in late January but by then I was invested in my bracing experiment. I was also pain-free, swimming, riding a bike and doing pilates. Getting cut open and going back to crutches wasn't top of my list of things I wanted to do at that stage. The brace came off and next thing I knew I was back to running. Oh, glory. You should have seen the suntan lines left by the brace.

Fast-forward six months and the results are in. A follow-up MRI scan has shown that the ACL is intact. I have no knee instability, no pain and no immediate plans to return to netball. Basketball is still on the cards because it's not netball and my border collie approach may translate quite well. Getting the ball remains my only game plan and sport remains the only culturally sanctioned outlet for my aggression.

Of course, I'm just one person. Surgical ACL repairs obviously remain a necessary and optimal treatment in many circumstances. Wearing a brace for weeks isn't always feasible, especially at 90 degrees. Ultimately, it's still a gamble to wait for your ACL to maybe heal itself when you can have the peace of mind of knowing the surgeon has put it back together.

The healing of my ACL, in the context of the broader evidence base, still raises many questions for me. Was it ever fully ruptured? This has been a criticism of studies that show high rates of spontaneous ACL repair with non-surgical treatment – the possibility that tears are being diagnosed as a full rupture when there are still fibres intact.

A 2017 meta-analysis compared MRI diagnoses with results of a follow-up arthroscopic procedure. When comparing the MRI scan with physically seeing the injury, researchers found a misdiagnosis in 10 per cent of cases.

Should surgery have been considered a first-line treatment for someone in my position? I was immediately referred to a surgeon on presenting to the general practitioner, even though there were no gold medals at stake and I required only a functioning knee, not an elite knee. Are we a little too quick to hop on the operating table when it comes to knee ligaments?

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... the ACL is intact.

One of the first major randomised control trials to seriously challenge widespread use of surgical ACL repair was Richard Frobelle's study out of Sweden in 2010. Out of 121 adults, 62 underwent early ACL reconstruction, 23 underwent delayed reconstruction and 36 underwent rehabilitation alone.

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Frobelle found no significant differences in outcomes between the treatment groups. The rehabilitation option substantially reduced the need for surgical reconstructions. Follow-up analyses of this trial continue today, 15 years later, and still with no difference emerging in long-term patient reported outcomes.

Frobelle's work spawned a wave of randomised control trials comparing non-surgical structured rehabilitation of ACL tears with surgical treatment, as opposed to simply comparing outcome of surgery and no treatment at all. We know surgery is a far superior option to ignoring an ACL injury and trying to "walk it off", but if a rehabilitation program is implemented it becomes much more of a grey area.

These smaller sample randomised control trials have since been collated in systemic reviews that collectively measure outcomes in a much larger group and still fail to reliably demonstrate superior outcomes resulting from ACL surgery. Longitudinal studies out of Europe increasingly have shown little difference in long-term outcomes for operative and non-operative treatment of ACL repair, even in high-level athletes.

Fifty patients who underwent surgery or structured rehabilitation in the Netherlands between 1994 and 1996 were followed up in 2018, with higher levels of knee osteoarthritis found in the operative group. Better knee stability was reported in the operative group but, curiously, this did not translate to objectively improved knee function.

Australia has the highest rate of ACL surgical reconstruction in the world and climbing. Despite clinical evidence that directly challenges perceived benefits of ACL surgery for the general population there remains a strong preference for surgical repair.

Matildas' Sam Kerr had knee surgery after her ACL tear. Picture: James Worsfold/Getty Images

Why does this preference persist? In a 2022 study several surgeons and patients anonymously discussed their biases towards surgery.

The ACL Surgery Necessity in Non-Acute Patients trial followed outcomes of patients with symptomatic but non-acute ACL injuries who were randomly assigned to surgical and non-

surgical treatment groups. This trial did find improved self-reported outcomes for the group that received surgery, but also collected qualitative findings around the bias towards surgery that existed in surgeon and patient populations.

“The main bias was towards surgical reconstruction with … a large number of patients not enrolling due to having a preference for surgery,” the authors reported.

“This was also largely an issue for the surgical community where the main preference was for surgical intervention. Surgeons were encouraged to recognise their own lack of equipoise and therefore deem themselves not suitable as a recruiting surgeon/site.”

Patients also saw surgery as a quick fix, a way to undo the injury that had sidelined them. They spoke of wanting “to be put back right again”. Another described surgery as a forgone conclusion: “In my mind it was surgery, there wasn’t really an option not to.”

There is both awareness of the biases that exist and a consensus in the literature that current evidence is insufficient to support surgery as a default treatment of ACL injuries. The attitudes to ACL surgery are highly relevant given much of the evidence base relies on subjectively reported outcomes. People who have ACL surgery are invested in that procedure having worked. People who undergo non-surgical rehabilitation may harbour the belief that the approach is inferior to surgery.

I can certainly relate to wanting to be put back together again immediately; wanting to wind back the clock and never have stepped on the court that night. The intrusive mental replays persisted for days afterwards. There is something very hard to shake about the knee bending a way it’s not supposed to. In an instant, the carpet is just ripped out from underneath.

If the knee can slip that way, what other unwanted frailties does my body have in store? What else is lurking around the corner? What an extremely rude “welcome to middle age” from my knees.

In an injured state, we are vulnerable and desperate for some kind of resolution, which surgery provides. Unfortunately, ligaments are such a long game and healing, with or without surgery, is painfully slow.

Considering the evidence and knowing the “elite athlete” ship has sailed for me, I believe the bracing approach was a good option. Maybe one day there will be a surgery that can make me 22 again and fix my bowed legs; until then, I will hang on to my trusty knee brace.