

Paralysed avid cyclist learns to be independent once more

With help from SPD, he gains greater ability in performing his daily activities

Shermaine Ang

In 2021, while cycling home, Mr Taufik Omar was involved in a traffic accident that left him paralysed from the chest down.

An avid sportsman, he went from playing soccer weekly and cycling twice a week to being disabled and in need of constant care.

The 56-year-old was in the Pasir Ris area when a taxi appeared suddenly in front of him. He grabbed his brakes, but could not stop in time.

"I was still conscious and, at first, thought it was not so bad. But it felt strange, like my legs were still on top of the taxi," said the father of four young children, who was working as a Grab driver at the time.

Mr Taufik suffered multiple fractures to his ribs and spine in the accident – injuries that left him paralysed from the chest down. He is now wheelchair-bound.

The number of people who acquired their disability like Mr Taufik is not available. But there is data on Singapore residents who experience difficulties with daily activities.

It was collected for the first time in the 2020 population census.

It showed that 97,600 Singapore residents aged five and older were unable to, or had a lot of difficulty, performing at least one basic activity in six domains: seeing, hearing, mobility, self-care, communication, and concentrating or remembering.

In total, 62,500 people faced mobility challenges such as walking. The census also found that 32,100 residents had difficulty performing self-care activities like washing and dressing.

Mr Terance Low was 23 when he contracted viral encephalitis,

which leads to an inflammation of the brain. For the last 24 years, his father Low Chai Huat has been helping him speak, walk, control his bladder and take care of himself.

The elder Mr Low, 86, is a widower and has four older children.

Mr Terance Low, 47, goes to the day activity centre in Outram, operated by local organisation SPD, thrice a week. There, he does activities designed to maintain his cognitive abilities and motor skills, such as writing and drawing.

The charity helps people with disabilities of all ages to reintegrate into mainstream society. Representatives of SPD had also approached Mr Taufik to help with his rehabilitation.

He was then two months into his recovery in Changi General Hospital.

Mr Taufik, who had worked as a senior IT administrator at a hotel for 22 years before becoming a private-hire driver, joined SPD's transition-to-employment programme, which reintegrates people with acquired physical disabilities back into the mainstream workforce.

Aside from employment placement and support, the programme gives people access to occupational therapists, physiotherapists, social workers and employment support specialists.

Mr Taufik went through physical rehabilitation at SPD to gain greater independence in daily activities.

"Going to SPD for therapy gave some structure to my day. I didn't want to just sleep and watch TV," he said. "I would rather do something and be active. That is more like me, like how I used to be and what people know me for."

He also drew strength from interacting with others undergoing rehabilitation at SPD.



Mr Taufik Omar was paralysed from his chest down after being involved in an accident in 2021. ST PHOTO: SHINTARO TAY



Mr Terance Low with his Nanyang Academy of Fine Arts design portfolio from 1995. He contracted viral encephalitis when he was 23. ST PHOTO: DESMOND WEE

"I met younger people, even teens with spinal cord injuries. I felt so sad for them," said Mr Taufik.

Over the course of a year, he built up strength in his arms and upper body, and was able to use a wheelchair and lift himself in and out of his bed.

He also learnt to travel on public transport and get in and out of the family car on his own.

But he still needs help getting dressed and using the bathroom. The Ministry of Health (MOH)

said about 17,000 individuals have been benefiting from its severe disability schemes, including ElderShield and CareShield Life, as at end-2022. More than 85 per cent of them are aged 60 and above.

Common health conditions leading to severe disability include stroke and spinal cord injuries, and the progression of illnesses like dementia, said MOH.

Mr Taufik's family has not applied for any of the schemes, preferring instead to be self-reliant. His wife Noraini Che Rahman, 44,

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MR TAUFIK OMAR

gets nerve pain, which flares up despite him taking painkillers twice a day. But he is determined to be able to drive again.

Mr Taufik secured a special driving licence for people with disabilities after clearing the test with just one lesson. It allows him to drive a car fitted with a system that is operated only with hands.

"I hope to drive again. I miss it," he said.

While he cannot cycle with his children now, he joins them in his wheelchair, which can go faster with a motorised attachment.

In December 2022, he went on a long-awaited pilgrimage trip to Mecca with his family. His wife and children, who are aged seven to 13, helped him during the two-week trip.

Mr Taufik is hoping to participate in a treatment trial involving robotics to regain some mobility. If it does not work, he plans to train for wheelchair racing.

"Deep down, I hope to recover fully, even though the doctor said there is almost no chance of recovery," he said.

"But I hope to accept whatever condition I have right now and live my life in a more fulfilling way."

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Engineering student gets 3D-printed finger after bike accident

Lee Li Ying

Two inventions tapping 3D printing are helping Tan Tock Seng Hospital (TTSH) patients, such as those who have lost their fingers or part of their skulls, in their recovery journey.

One beneficiary is final-year polytechnic student Russel Ko, who was riding pillion on his friend's motorbike in October 2022 when it hit a car.

Mr Ko's right hand was caught in the motorbike's wheel, and his ring finger and pinky were severed.

"At first, I did not know my fingers were missing, and I still stood up. It was only when I felt my hand was numb and I looked down (that I realised my fingers were missing)," said Mr Ko, 21.

"The shock really hit me and I just fell, laid down on the road and cried for help."

His friend retrieved the fingers, but TTSH doctors were able to save and reattach only his ring finger.

Fortunately, Mr Ko was eligible for a TTSH pilot study for 3D-printed functional finger prostheses. The project was part of a media showcase on Thursday of the capabilities of the hospital's Medical 3D Printing Centre.

Dr Bernice Heng, associate consultant at TTSH's hand and reconstructive microsurgery department, said the hospital sees about 20 to 30 cases of amputated fingers a year, a result of industrial and road traffic accidents.

According to media reports, 46 workers lost their hands or fingers

in amputation accidents in 2020, mainly due to the unsafe use of machinery.

Dr Heng said that typically, patients would be offered a cosmetic finger prosthesis, which looks real but is not functional. But the 3D-printed option with movable joints, made in the Medical 3D Printing Centre, would be able to return close to normal function to the patients.

It costs a few hundred dollars, compared with a few thousand dollars for a cosmetic prosthesis.

Previously, Dr Heng was aware only of cosmetic fingers or myoelectric prostheses that use muscle activity to power movement. Patients were not keen to wear these larger-sized prostheses.

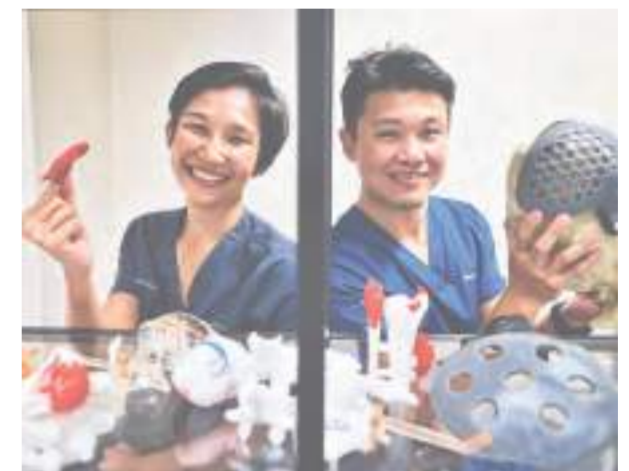
"But this 3D-printed finger prosthesis is lightweight and functional, and patients take to them better," she added.

Mr Ko is now waiting for his prosthesis as the centre is refining it for length and comfort.

"I am definitely looking forward to receiving my pinky. There are some difficulties in daily activities like opening a bottle... or carrying heavy stuff. As an engineering student, I also have to use some tools to do work. Without the pinky, my hand is less stable," he said.

Another 3D printing project is benefiting patients who have had craniectomy, a life-saving surgical procedure to remove a portion of the skull to help relieve pressure on the brain after a massive stroke or brain injury.

After that surgery, some patients have had to wait up to a year to undergo a second operation to restore



Tan Tock Seng Hospital's Dr Bernice Heng (left) with a 3D-printed finger prosthesis and Dr Michael Yam holding a cranial cap on Friday.

Polytechnic student Russel Ko, who had lost his right pinky in an accident, wearing a 3D-printed functional finger prosthesis from Tan Tock Seng Hospital on Friday. ST PHOTOS: KEVIN LIM

the skull. In the meantime, they would typically have to wear helmets to protect their heads, but these are hot and uncomfortable, especially in Singapore's climate.

Associate Professor Karen Chua Sui Geok, senior consultant at TTSH's Rehabilitation Centre, said protective helmets that are reinforced internally can weigh close to 400g.

"So, 400g is like two pieces of steak. So, would I put two pieces of steak on my head and walk around the whole day to protect my crani-

um (part of the skull enclosing the brain)?"

"So, clearly, while we discharge our patients... with helmets, they don't wear them. Some will come to the clinic with no protection except a cap, scarf or beanie," she noted.

There have been cases in Singapore where the patients died after falling and hitting their heads.

Between March 2019 and March 2021, with a \$20,000 innovation grant, Prof Chua's team worked with an external vendor to produce

3D-printed cranial caps for such patients.

Using CT scans and photographs, as well as taking into consideration factors such as whether the person wore glasses, each cranial cap was customised to fit the patient.

"We did a small trial of about 10 patients, and it was very well received. Eighty-five per cent of patients said they liked it. It was very lightweight – it weighed about 60g, and the heaviest we had was 100g. There was also no damage to the skin," said Prof Chua.

The team is now working with the Medical 3D Printing Centre to scale up the programme. It has refined the cranial cap's design such that stroke patients who typically experience weakness on one side of their body can wear it with one hand.

The hospital has also put in an intellectual property application for the cap, and hopes to expand the offering through referrals and to other hospitals in the future.

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