

# BIXEPS

MUSCLE MAGNETIC MITOHORMESIS

Bringing Added Exercise Benefits without Physical Strain  
A Patented Technology by NUS (Singapore) & ETH (Zurich)



# ABOUT BIXEPS

Our company, QuantumTX, was founded in 2019 by NUS Associate Professor Alfredo Franco-Obregón and Professor Lee Chuen Neng.

Leveraging decades of research, they developed the Muscle Magnetic Mitohormesis patented technology, which provides users safe and gentle muscle activation and empowers them to get fitter, healthier and enhances their capacity for exercise.

Today, QuantumTX has launched our first muscle activation device: BIXEPS that allows users to stay active and healthy as they age, enhancing their muscle recovery, performance and overall quality of life!



Photo by One Wellness Medical, Eu Yan Sang

**This device is intended to improve general wellbeing and to maintain a healthy lifestyle. It is not intended to be used for any medical purpose, management or treatment of any medical condition or disease. Please consult a physician for any medical advice required.**



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## 1. Muscle Magnetic Mitohormesis

ACTIVATE MUSCLE  
WITHOUT PHYSICAL STRAIN

Electro Magnetic waves activate and train muscle triggering beneficial adaptations similar to exercise.

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## 2. Mitochondria Activation

INCREASE ENERGY OF CELLS

Mitochondria turn on and create energy needed for work, repair and rebuilding.

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## 3. Myokine Signaling

IMPROVE VARIOUS BODILY FUNCTIONS

Muscle signals (called "Myokines") are released to improve other bodily functions like metabolism, regeneration, moderating inflammation, etc...

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# HOW BIXEPS WORKS



# BENEFITS OF BIXEPS

BIXEPS Brings You The Benefits Of Exercise Without Physical Strain

- Improves muscle energetics and performance
- Promotes muscle rebuilding and recovery
- Enhances metabolism
- Improves function and aids transition to healthier and more active lifestyle

Pilot studies were conducted from 2015 to 2017 at National University of Singapore, Yong Loo Lin School of Medicine, Department of Surgery.

BIXEPS fields were shown to improve muscle energetics, providing energy for recovery. The treated group also had higher blood-based signals that encourage muscle regeneration.

Ongoing local and international clinical trials continue to explore the potential of our technology for broader applications in areas such as diabetes, stroke recovery, osteoarthritis, and sports rehabilitation.

To date, thousands have benefitted from BIXEPS.

They experienced strength and endurance gains, and enhanced mobility contributing to their overall well-being and performance.



**Awadh Salim**  
Process Technician

There has been a lingering pain and tightness in my right knee and calf muscle which I have been suffering from for years. I have tried many methods, including taking curcumin pills, acupuncture, deep tissue massage, and cupping.

My colleague, Yung, introduced me to BIXEPS. Signing up for the 12 week programme was the best decision I have made thus far. By the 3rd session, I felt much better. After completing my first round of BIXEPS, I joined my wife last week for a 10km run. I enjoyed my run without any problems all thanks to BIXEPS.



**Theresa Wong**  
Retired Tour Guide

After a couple of weeks of BIXEPS sessions, my legs felt stronger. I am able to walk further and for longer. Previously I was inclined to hop into a taxi/private hire car, but now I find taking a bus or MRT a breeze. In addition, my weak knees are not bugging me as much.



**George Teo**  
Retired

Prior to the BIXEPS programme, I had a lot of weakness in my legs. It was painful in my hip and feet when I took even a few steps. I could not climb stairs the normal way, and had to rely on the handrails to balance myself.

After about a month of treatment on the BIXEPS machine, I felt some relief when I walked. My hips weren't that tight and I could walk quite normally. My movement up and down the stairs was much faster, with better balance.

At the end of 12 sessions, I felt that my leg movement had returned to normal, and I could go up and down stairs without using the handrails. Indeed I am grateful to the QuantumTX team for their gentle service. BIXEPS is painless and helped to restore my movement. Thank you QuantumTX for this treatment to restore my mobility.



**Colin Soh**  
Retired Senior Executive

At age 61 I was unable to do much jogging because I had injured both my feet arches. Even light walking was painful. Was introduced to BIXEPS and I was intrigued enough to try out a 10 treatment package. It turned out to be a great decision! I slowly but surely began noticing strengthening in my legs after 6 -7 sessions. By the last session I was sure that I wanted to sign up for another 10 treatments. While I experienced little change early on, I can certainly testify that my legs and overall fitness has noticeably improved compared to 4 months ago. I certainly recommend BIXEPS to anyone who is not able to do any physically demanding exercise.

# POWERING BETTER HEALTH WITH MITOCHONDRIA

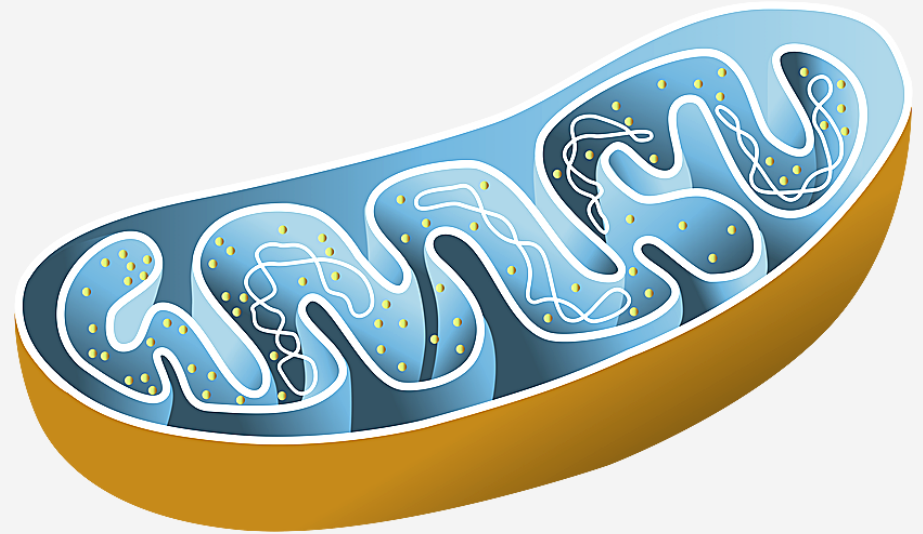
Mitochondria are the powerhouses of our cells. They produce energy that is essential for the functioning of our body, and for recovery and regeneration.

**As we age, the quantity and quality of our mitochondria decline.**

This can lead to reduced energy production and contribute to the feeling of fatigue and decline in overall physical performance

Maintaining mitochondria health as we age is vital for our well-being. Regular exercise remains as one of the most effective ways to activate and maintain healthy mitochondria.

BIXEPS magnetic mitohormesis technology supplements exercise and provides additional **muscle and mitochondria activation**, leading to **better muscle energetics, enhanced physical performance, improved recovery and regeneration**, and a general boost to our health.



## **The concept of Mitohormesis**

Mitohormesis is a process of giving mitochondria a healthy amount of stress to train them and enhance their efficiency and capacity. BIXEPS magnetic mitohormesis sessions helps muscle and mitochondria to adapt and become fitter over time.

FRANCO-OBREGÓN, A. (2023). Magnetic mitohormesis: A non-invasive therapy for inflammatory disorders?. BIOCELL, 47(2), 239–244.

# IMPROVING MUSCLE ENERGETICS

By improving mitochondrial health and efficiency, we improve energy production and usage in muscles.

Better muscle energetics supports our training, leading to **improved physical performance and training capacity.**

Greater energy availability also supports the repair and regeneration of muscle tissue, facilitating **faster and easier recovery.**

Together BIXEPS muscle activation supports both our training and recovery, leading to **improved fitness levels and training adaptations.**



BIXEPS uses Muscle Magnetic Mitohormesis technology to activate and train mitochondria optimising our muscle energy production and usage.

Stephenson, Mary C., et al. "Magnetic field therapy enhances muscle mitochondrial bioenergetics and attenuates systemic ceramide levels following ACL reconstruction: Southeast Asian randomized-controlled pilot trial." *Journal of Orthopaedic Translation* 35 (2022): 99-112.

# PROMOTING MUSCLE REBUILDING

Starting around age **40**, muscle mass **decreases** by about **8% per decade**.

After **70**, muscle mass **decreases** by about **15% per decade**.

This is dangerous because muscle mass plays a key role in our health. Muscle plays a vital role in regulating our metabolism, regeneration and even immune response.

Muscle loss is a natural process of ageing, largely accelerated by inactivity. Regular exercise is the best way to reduce muscle loss. Maintaining healthy levels of muscle mass can help to maintain activeness, independence and quality of life in seniors as they age.

Kirwan, Richard, et al. "Sarcopenia during COVID-19 lockdown restrictions: long-term health effects of short-term muscle loss." *GeroScience* 42.6 (2020): 1547-1578.  
Prado, Carla M., et al. "Implications of low muscle mass across the continuum of care: a narrative review." *Annals of medicine* 50.8 (2018): 675-693.  
Argilés, Josep M., et al. "Skeletal muscle regulates metabolism via interorgan crosstalk: roles in health and disease." *Journal of the American Medical Directors Association* 17.9 (2016): 789-796.



## **Further, it becomes harder to build muscle with age**

Interventions for muscle loss focus on increasing physical activities. However, many elderly and frail individuals may find these challenging due to age-related aches and pains and muscle weakness.

K. Åhlund, B. Öberg, N. Ekerstad, and M. Bäck, "A balance between meaningfulness and risk of harm – frail elderly patients' perceptions of physical activity and exercise – an interview study," *BMC Geriatrics*, vol. 20, no. 1, p. 490, Nov. 2020, doi:10.1186/s12877-020-01868-2.

**In frailer and older individuals, improving muscle health and muscle energetics can help to reduce deconditioning, and support muscle rebuilding.**



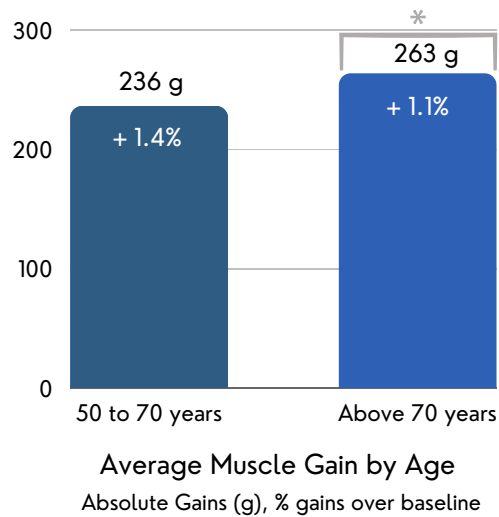
In 2022, QuantumTX evaluated the changes in Skeletal Muscle Mass of 33 users in a pilot study and showed that weekly 10-minute BIXEPS sessions helped slow the loss of muscle mass.

With BIXEPS, **64%** of all users and **71%** of inactive individuals experienced an increase in skeletal muscle mass.

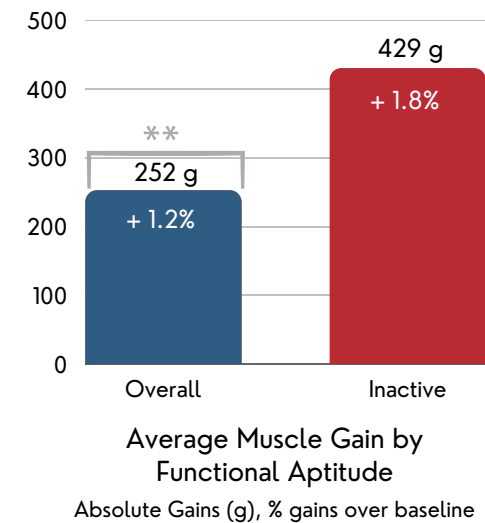
**Users gained 252g in Skeletal Muscle Mass (+1.2% from baseline) after 8 sessions of BIXEPS.**

Gains in muscle mass were significantly higher for older and weaker individuals.

### Older seniors gained more muscle mass



### Inactive individuals gained more muscle mass



\* p < 0.1, \*\* p < 0.05

Of note, while muscle mass gains can be a positive signal towards better muscle health, our “slow-twitch” muscle-fibres required for daily activities are usually non-bulky and can **improve in function, even without noticeable gains in mass.**

# UNDERSTANDING KNEE PAINS

Many adults experience knee problems as a result of aging and continual stress on the knee joint. Knee pain, tightness, stiffness, and swelling are common complaints in older adults. Age-related knee problems are often commonly associated with the following causes:

## 1. General wear and tear from daily activities

Our knees absorb a huge amount of pressure with every step — typically 1.5 times our body weight. That pressure, plus regular wear and tear from daily activities like walking, bending, standing and lifting, takes a toll over time. Muscles and ligaments get weaker, leading to greater strain on the joints.

## 2. Osteoarthritis

Osteoarthritis is the most common type of arthritis that affects the knee. It is a degenerative process where the cartilage in the joint gradually wears away. Osteoarthritis often affects older adults and could be caused by excess stress on the joint (repeated injury or being overweight). When the cartilage is worn, the bones rub against each other, leading to pain, stiffness, and swelling.

Age-proof your knees. Harvard Health. (2020, October 13). Retrieved June 14, 2022, from <https://www.health.harvard.edu/pain/age-proof-your-knees>  
Global, regional prevalence, incidence and risk factors of knee. Retrieved June 14, 2022, from [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(20\)30331-X/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(20)30331-X/fulltext)  
Knee pain: Finding ease for old knees. HealthHub. Retrieved June 14, 2022, from <https://www.healthhub.sg/live-healthy/1060/finding-ease-for-old-knees>  
Prairie Spine. (2019, May 8). Age-proof your knees. Prairie Spine. Retrieved June 14, 2022, from <https://prairiespine.com/spine-care/age-proof-your-knees/>



## 3. Muscle weakness

Age-related muscle weakness in the legs results in reduced support to the knees. Boosting muscle strength in the lower limbs stabilizes the knee joint, and helps the muscles absorb stress placed on the knee.

## 4. Rheumatoid arthritis and bursitis

Rheumatoid arthritis can also affect the knees by causing the joint to become inflamed and by destroying the knee cartilage. Bursitis, also known as housewife's knee, occurs when prolonged bending and kneeling leads to irritation of the fluid sac above the kneecap.

## 5. Sports related injuries

Active adults who run or play sports that involve jumping or quick pivoting are also more likely to experience knee pain and problems such as sprained or strained ligaments, cartilage tears, and tendonitis.

Dealing with knee discomfort can be challenging, as it affects mobility, quality of life, and ease of completing daily tasks such as walking and climbing stairs. Furthermore, it hinders our ability to get the exercise that is necessary for strengthening and rebuilding the joints.

Around 1 in 4 BIXEPS users have knee troubles. These users were assessed for balance, gait speed and lower limb strength before and after 12 weeks of BIXEPS.

**88%** of users with knee issues saw **improvements in lower limb function and strength.**

**75%** of them reported **reduction in their knee discomfort over the 12 weeks of BIXEPS use.**

BIXEPS muscle activation trains and strengthens muscle, supporting more physical activity. Activated muscles also release pro-regenerative signals that relieve many complaints that may build up with inactivity.

### Yvette Cheak



After many falls my right leg became very weak and the knee often buckles. A friend introduced me to BIXEPS as she said she benefitted from it. So I signed up for BIXEPS in Sept 2021. Since using it, there was less swelling at the ankle and knee, and I became more energetic. My knee became less painful. After the first package, I decided to sign up for a second package. Since then, my knee does not buckle as much and someday, I am able to walk at home without the walking stick.

### Charlie Yi

Executive in Venture Capital



I had an issue with my right knee with a torn meniscus after a cardio workout. It was too small to operate so the doctor recommended physical therapy. As expected after 1.5 years the knee was much better but not 100%. Fluid still remained, where it was visibly noticeable and I could not fully extend my knee. It affected my regular walking and physical activities. After 3 sessions with BIXEPS in December of 2021, the fluid went away instantly and now I can fully extend my leg. Truly remarkable. I have continued to use it ever since then. I am now back to my normal, 3-4 work out sessions per week without any discomfort.

# ENHANCING PHYSICAL FUNCTION

As we age and experience a natural decline in physical function — such as reduced muscle strength, balance, and coordination — our risk of falls tends to increase due to decreased stability and mobility.

Falls are a leading cause of disability, injury, institutionalization and death in elderly people. 1 in 3 community-dwelling elderly aged 65 years and above will have at least one fall within a year. This risk increases with age. These falls result in serious injuries that affect the livelihood of many.

Exercise is needed to strengthen lower limbs and improve balance in order to reduce falls. However, due to fears of falling or worries of their own frailty, 2 in 5 elderly avoid exercise, inadvertently further increasing their risk of falls.

Ang GC, Low SL, How CH. Approach to falls among the elderly in the community. Singapore Med J. 2020 Mar;61(3):116-121. doi: 10.11622/smedj.2020029. PMID: 32488276; PMCID: PMC7905119  
Hornyak V, Brach JS, Wert DM, Hile E, Studenski S, VanSwearingen JM. What is the relation between fear of falling and physical activity in older adults? Arch Phys Med Rehabil. 2013;94(12):2529-2534. doi:10.1016/j.apmr.2013.06.013  
Yap, J.L.Y., Tai, Y.K., Fröhlich, J., Fong, C.H.H., Yin, J.N., Foo, Z.L., Ramanan, S., Beyer, C., Toh, S.J., Casarosa, M., Bharathy, N., Kala, M.P., Egli, M., Taneja, R., Lee, C.N. and Franco-Obregón, A. (2019). Ambient and supplemental magnetic fields promote myogenesis via a TRPC1-mitochondrial axis: evidence of a magnetic mitohormetic mechanism. The FASEB Journal, 33: 12853-12872. <https://doi.org/10.1096/fj.201900057R>



**BIXEPS uses Muscle Magnetic Mitohormesis technology to bring users the benefits of exercise without physical strain. Thus, increasing balance, gait speed and leg strength for better function.**



Users in the community aged 60 and above were assessed for balance, gait speed and lower limb strength before and after 12 weeks of BIXEPS. Results show the improvements as seen to the right.

The majority experienced functional gains after 12 weeks (74–85%). Most users in the high-fall risk categories noticed improvements (80–100%). Many 'graduated' with low-fall risk scores after 12 weeks of BIXEPS (25–47%).

An extended study with users over 20 weeks showed that their balance and mobility continued to improve significantly with longer term use.

## Better Balance

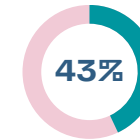
Timed Up and Go timings



of seniors improved, with average gains of 16.3%

For seniors with slower timings associated with high fall risk

100% improved



moved out of high fall risk category

## Greater Leg Strength

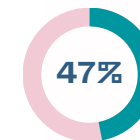
5 Times Sit to Stand timings



of seniors improved, with average gains of 14.2%

For seniors with slower timings associated with high fall risk

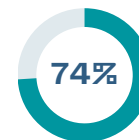
100% improved



moved out of high fall risk category

## Better Mobility

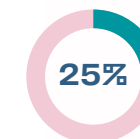
4m Gait Speed test



of seniors improved, with average gains of 24.9%

For seniors with slower timings associated with high fall risk

80% improved



moved out of high fall risk category

# BIXEPS

USER TESTIMONIAL



## Darren Lim, National Cyclist

Before using BIXEPS, I found it harder to recover. After using BIXEPS, my **power outputs are a lot better, and I don't feel that my legs are very heavy** as I unclip after a hard ride.

There's definitely been **improvements in endurance**. The difference comes in after the third or fourth week, I feel so much easier (to cycle) and my heart rate is lower as well.

## SPORTS RECOVERY

Enhanced muscle energetics can improve recovery. This shortens recovery times between training intervals. It also allows athletes to train harder for longer

BIXEPS muscle activation helps maintain physical form during training downtime, enabling a quicker return to their 'A' game!





## Adrian Ng

Tennis Coach and  
Cycling Enthusiast

### Exponential Recovery

I am a tennis coach and have been coaching for almost 30 years.

While coaching, I have to move around the court for long hours, and that causes my knees to hurt a bit as I have torn my meniscus previously.

I also cycle once to twice a week if time permits, and I normally always cramp after cycling.

After attending the BIXEPS programme, the cramps I used to get after cycling have gone away. I can feel that my legs are stronger and I am able to last longer on my bike rides.

I am also starting to play a bit more tennis compared to before the program.



## Marian Thng

Softball Player

### More Power

Power and strength were what I'd always lacked.

When my friend introduced BIXEPS to me, I was initially skeptical; I thought to myself: "Sure or not? I'm doing my bat sets every day, and BIXEPS can help me improve?"

Well, I signed up with BIXEPS eventually. There was no noticeable effect after my 1st 2 sessions. However, from my 3rd session onwards, I feel I was able to utilize the strength from my thighs especially and transfer the strength to my bat swings. And the extent of my hits got better with subsequent sessions.

I do feel more powerful when I execute my bat swings.

Thank you BIXEPS. You got a fan in me!



## Foo Pei

President of Singapore  
Baseball & Softball  
Association  
(SBSA)

### A New Way

"I am a weekend-warrior training for a Masters (age 35 and above) softball tournament, and I only has 6 months to get myself up to speed to meet the demands of a competitive softball tournament.

Since the game of softball is a highly explosive sport with many start-stop movements to maneuver, it was clear that I needed to put in many more hours of high intensity training in between the weekend trainings.

Then I was introduced to BIXEPS! I started to feel the effects from just 3 to 4 sessions of BIXEPS treatment. My game was improving as I was more nimble on the field and I was feeling more "connected". I could string my batting and fielding movements together better. Even my coaches and teammates noticed the difference.

Thank you BIXEPS for allowing me to enjoy my game at a more competitive level again.

# BOOSTING METABOLISM

Mitochondria are the primary site of metabolism, converting food into energy. Mitochondria primarily use fat as the most efficient energy source. When activated, they increase the rate of fat metabolism, leading to a reduction in harmful fat around the body. Mitochondria dysfunction with age leads to accumulation of harmful fat over time.

## The dangers of visceral fat

Visceral fat accumulates within the abdominal cavity and surrounds vital organs. Unlike subcutaneous fat, visceral fat is metabolically active and can release harmful substances including inflammatory adipokines and free fatty acids – causing inflammation, insulin resistance, and other metabolic disturbances.

BIXEPS has been shown to activate our fat stores by increasing the number of mitochondria in a process called 'fat browning'. This enhances the ability to burn fat for energy – helping to **reduce visceral fat accumulation**.

**Individuals with higher baseline BMI values show a higher response rate and greater reductions in visceral and total body fat levels with BIXEPS.**



## Our prior research on fat metabolism

Prior pre-clinical studies have shown that exposure to magnetic mitohormetic fields accentuated fat browning and insulin sensitivity in mice. Prior clinical trials showed 16 weeks of BIXEPS also increased fatty acid metabolism.

Stephenson, Mary C., et al. "Magnetic field therapy enhances muscle mitochondrial bioenergetics and attenuates systemic ceramide levels following ACL reconstruction: Southeast Asian randomized-controlled pilot trial." *Journal of Orthopaedic Translation* 35 (2022): 99-112.  
Tai, Yee Kit, et al. "Magnetic fields modulate metabolism and gut microbiome in correlation with Pgc-1 alpha expression: Follow-up to an in vitro magnetic mitohormetic study." *The FASEB Journal* 34.8 (2020): 11143-11167.



QuantumTX evaluated the changes in Total Body Fat and Visceral Fat Area of 70 users over a period of 12 weeks.

We showed that weekly 10-minute BIXEPS sessions helped to reduce both visceral and total body fat in **~65%** of all users.

**After 12 sessions of BIXEPS, users saw:**

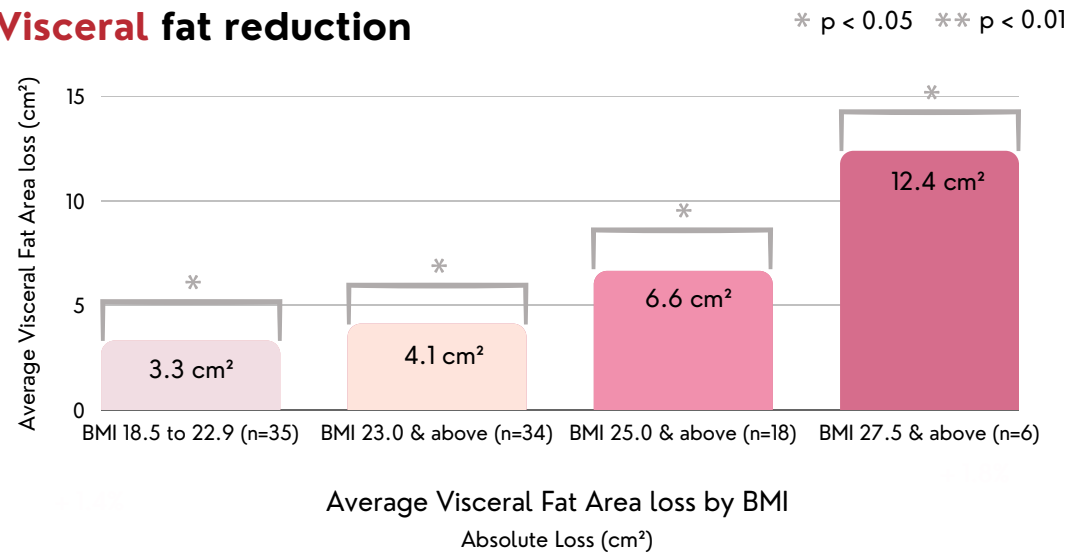
- **Reduction of 3.67 cm<sup>2</sup> in Visceral Fat Area (-3.2% from baseline)**
- **Reduction of 723g in Total Body Fat (-3.8% from baseline)**

Loss in total body fat and visceral fat was dependent on users' starting BMI.

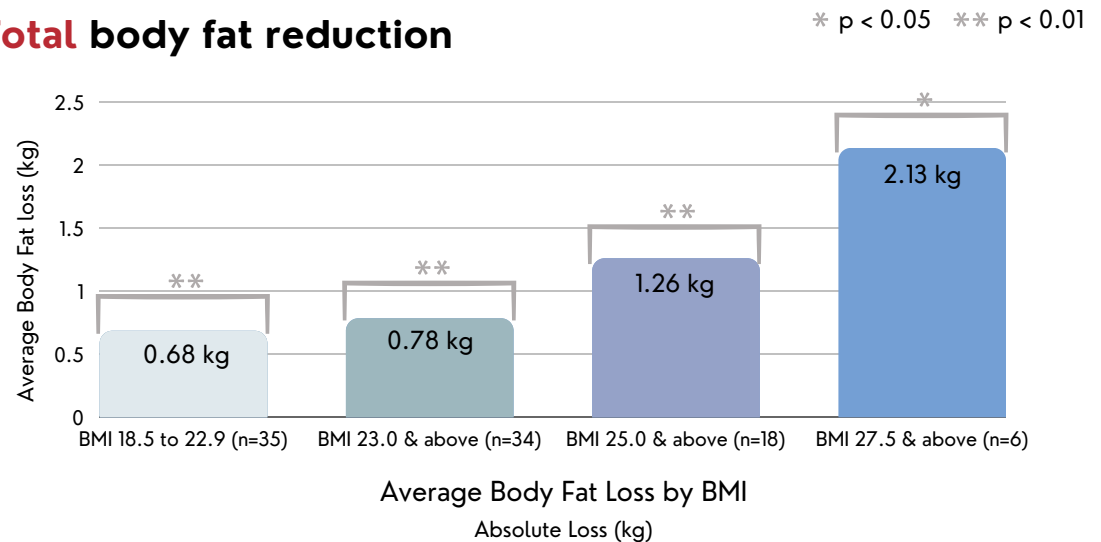
Individuals with higher baseline BMI values showed a greater tendency to respond and larger reductions in fat.

BMI 18.5 to 22.9	Normal
BMI 23.0 to 24.9	Overweight
BMI 25.0 to 27.4	Mildly Obese
BMI 27.5 & above	Obese

## Visceral fat reduction



## Total body fat reduction

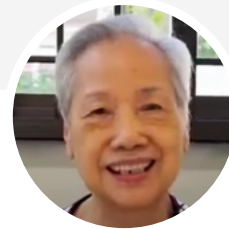


# CASE STUDY: COMMUNITY ELDERCARE

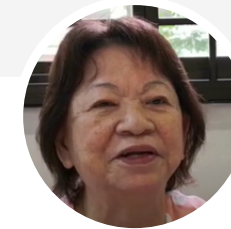
Between September 2020 to February 2021, QuantumTX partnered with Toa Payoh Care Corner (TPCC) for a 20-week community **double-blind study** involving >40 seniors.

The aim of the study was to evaluate the use of BIXEPS as a supplement to existing exercise programmes, to further improve their function and fitness. Brief 10-minute weekly BIXEPS sessions were easy to comply with, and enjoyed by more than 90% of seniors.

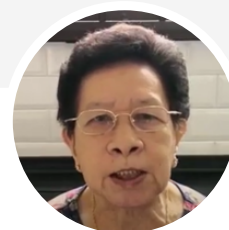
With BIXEPS, seniors enjoyed larger gains in their functional performance compared to exercise alone. A larger proportion of seniors with BIXEPS achieved clinically meaningful functional gains. Qualitative surveys showed that 91% of participants had improvements in quality of life. Reported benefits included: greater ease in completing daily-activities, better endurance during exercise and fewer impairments when navigating stairs or getting around the neighbourhood.



After using BIXEPS, I am completely healed. I **no longer have cramps**. I like to walk. After walking for long distances, my legs still have strength. I also no longer need support when I walk at home anymore. **I can move around freely!**



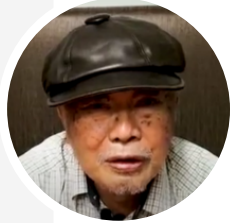
After using BIXEPS for some time now, **I can get up without pain**. I can walk up and down stairs better, it has improved a lot. I just feel more comfortable.



BIXEPS is good for our bodies. **My walking is very good now and feels comfortable**. I hope to continue BIXEPS because it is good for our bodies and our legs.



After going through the programme, I feel less lethargic. **I have more energy so I can exercise more and a lot better without any pain**. I can go on walks with my wife more often and I can walk longer than before.

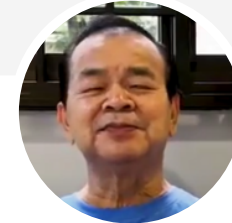


Before BIXEPS, I was always very tired. I would feel very weak, especially in my legs, when I woke up in the morning. I have cramps on and off all the time, but after using BIXEPS for 10 weeks, I feel very good. My **nerves and cramps have also improved**. I now wake up feeling fresh in the morning, and **I have gained at least 20% of my energy after using BIXEPS**. I would recommend BIXEPS to senior citizens as it works and is very convenient.

The benefit (of BIXEPS) is that I can walk further than what I usually walk. Now, when I walk for more than 5 kilometers, **I don't feel as tired as I used to**. It is very beneficial because now **I can walk independently and I can go anywhere** I want with the strength I have gained after using BIXEPS. I think it is very good.



I have been in this programme for quite some time. By the 7th session, I do feel a difference. Now, **I can walk better and more steadily, for longer distances without feeling strained**. In general, I feel that my condition has improved and **I am more active nowadays**. In fact, at home, I do a lot of chores, and I feel that I am able to do them better now.



After using BIXEPS, I am better. My health has improved. Before BIXEPS, my health was not great. My legs felt weak. After BIXEPS, **I can walk faster without feeling breathless**. The greatest benefit is **my body feeling better and healthier**.



After using BIXEPS, I feel that I have built more energy. **I can now walk more and for a longer duration**. I really enjoy it.

# USER TESTIMONIALS FROM ALL WALKS OF LIFE



**Mr Yoshiyuki Hiraoka**

Managing Director of  
Dialog OTEC

I was not walking well, my legs were in pain and I needed a walking aid. Even I went to do some exercise/treatment but there was not much improvement. After BIXEPS, my legs improved a lot and I felt less tired. I am so thankful for such a big improvement even at my age (75), and I hope I can introduce this device to others.



**Jennifer Tay**

Self Employed/ Preschool  
Teacher

I was looking for treatment for what became a chronic low to medium grade pain in both my legs when I was introduced to BIXEPS. With some desperation I signed up for the 10 sessions. After each 10 minute session, I felt some immediate relief in my calf muscles. After about 3-5 sessions I felt that the pain and strains in both my legs were easing. Today I'm able to move around faster and I can swim continuously twenty laps (600m) effortlessly. I would certainly recommend BIXEPS to my friends and relatives any time!



**Mr Yoh Chie Lu**

Founder of Biosensors  
International Group Ltd

My helper and I have been using BIXEPS for more than three months regularly (once every three days). We find our energy level has increased sharply both physically and mental awareness/sharpness. I am 70 years old and feel as energetic as if I was in my 50s. My helper is in her 40s and feels less tired after starting to use the device.



**Dr Shi Xu**

Founder of Nanofilm  
Technologies International Pte Ltd

Our family has been using BIXEPS for 1 month now. My wife and I feel our walking less tiring and legs less strained. My father-in-law is now 85. After using BIXEPS for 2 weeks, his steps are much firmer and he is now willing to go outside for walking. More amazingly we all felt that his mind state seemed better and sharper.



**Mr Abdul Razak Jaffar**

Project Director of  
Borneo Properties Sdn Bhd/  
Ex-National Badminton Player

I play badminton twice a week, it is quite intense. We have 2 hour sessions typically, and this is quite a regular occurrence. I used to have a lot of body aches after each session. After BIXEPS, what I realised was that the aches are not so intense, and the recovery seems to be much faster. Since we are playing twice a week, I realise that on a daily basis, the recovery gets faster and faster, so it makes quite a big change to my routine.



**Mr Andrew Chan**

Founder of  
The Soup Spoon

That pain that I used to have for quite a long time, after about 3 to 4 times of BIXEPS progressively disappeared. I find that there is a lot more strength in my legs now. Where I used to wake up and feel like my legs are a bit stiff when I go down the stairs, there is a lot less of such pain now. And on long cycling rides where I put a lot more power to my legs, I do generally feel that the legs have a lot more power and the endurance has increased, including noticeably even in my tennis.



**Lee Kheng Meng**

Retired Private  
Banker

I was introduced to BIXEPS through a family member, and have been using it for 20 weeks so far. After using BIXEPS regularly, I feel lighter on my feet. When walking and climbing stairs, there is less pressure and strain on my joints. During my regular table tennis sessions, I feel my reflexes and muscle reaction improving, and am less tired after each game.



**Mr Chin Choon Fong**

Retired Lawyer/Banker (ADB)

I credit BIXEPS for accelerating the recovery of my left ankle in early 2021. I had pulled or strained the ligaments there badly such that I was often hobbling around in pain. Rest and targeted stretches helped. But it was only after I supplemented with regular BIXEPS sessions that my left ankle improved rapidly. After 3 or 4 months, I can rest my weight fully on my left ankle without experiencing any discomfort. I'm able to exercise, take long walks and climb multiple flights of stairs again.



**Datuk Dr Edward Ong**

Founder of  
Sutera Harbour Resort

My wife, Enung and I have been using BIXEPS for the last 3 months and I find that I have more strength in my legs which has helped me walk further and not tire easily. I used to have balancing issues if I stand up after sitting for a long time but now I'm able to balance when I stand up. Generally, I feel more confident and independent in my walking and less concerned about the distance I walk. Thank GOD for BIXEPS!



**Ms Clare Wee**  
Regional Head (Asia)  
INSOL International

My mother and I have both been using BIXEPS for over six months. Her restricted movement caused by a surgical procedure was much improved. For myself, my painful arthritic knee improved to the point where I now feel no pain. Best of all, BIXEPS has helped me to remain strong and more able to continue all the sports I enjoy!! I highly recommend BIXEPS to all.



**Loo Chai Kee**  
Retired

I am a dialysis patient, and I was introduced to BIXEPS by my cousin. Because my feet are usually weak after dialysis, I often feel heavy when I stand up, and my knees have deteriorated due to dialysis, so I decided to try it. Then after the first time I did it, I felt light on my feet when I got up and felt remarkable results. After 12 sessions, my mobility assessment also showed significant improvement, so after one package was over, I decided to join the twice-a-week (24 sessions) program and keep using it again.



**Lilian Koh**  
Retired

Before I started the BIXEPS treatment, I had difficulty walking and climbing stairs and felt weak in my feet. Then, the right knee caused pain problems due to bone spurs. After the 7th session with BIXEPS, I can walk without crutches and even climb stairs. My legs are stronger and stronger now. Pain in the right knee also dropped from 7 to 1 on the VAS pain scale.



**Valarie Eramanis**  
Retired relocation consultant

I started using BIXEPS after an ankle injury. I learned about BIXEPS through the radio and wanted to find out more. The staff was most knowledgeable and helpful in explaining the treatment and how it could help me. I had surgery on my left ankle and started using BIXEPS to prevent muscle deconditioning and help with recovery. With BIXEPS, I noticed that the healing process and recovery were easier and faster compared to other surgeries I had previously. My doctors were pleased with my progress, and I have recommended others to try BIXEPS too. Now I am feeling stronger and can carry on with more muscle-building exercises at the gym.



**Pastor Timothy O'Connell**  
Pastor

In recent years, I have noticed a progressive weakness in my legs. One of the concerns was numbness and instability whenever I would make abrupt turns while walking. I also needed more confidence due to instability whenever I would climb up steps. I became alerted to BIXEPS and its new technology in early 2022. I could appreciate some of the testimonials that many participants experienced, seeing that I had similar issues with my legs. This inspired me to give BIXEPS a try for myself. The BIXEPS treatments have resulted in a notable improvement in my leg strength. I could feel beneficial effects after the 1st treatment, but longer-lasting improvements became noticeable around my 5th session. I completed the 12 sessions and am now enjoying the benefits of greater strength in my legs and confidence while walking that I did not have before. I am now motivated to undergo some strength training for my legs. I would not be surprised to see further benefits from my BIXEPS sessions. The sessions are painless and enjoyable due mainly to an attentive and caring staff. I am grateful to the QuantumTX team for this new treatment concept, as I am now experiencing new strength, confidence, and mobility in my legs. Wishing the best to QuantumTX and to those who utilize its service.



**Zac**  
Shipping Operator

I went through a few surgeries to correct my deformed foot. I have lengthened my left foot Tendon Achilles, and corrected the bunion on my big toe. I was informed that it would take at least six weeks before I could start walking and exercising. I was introduced to BIXEPS after the surgery and followed through with the weekly sessions. In the 4th week, I felt significant strength on my left leg. I was able to put strength on my feet. By the 8th week, I gained enough strength to walk normally. The doctor advised that patients usually require at least 12 weeks to walk normally. BIXEPS had shortened my recovery period significantly.

# MEDIA COVERAGE

THE STRAITS TIMES

Wednesday, May 24, 2023



Mrs Yvette Cheak using the Biceps device on Tuesday under the supervision of Ms Sharanya Venugopal, clinical research coordinator at QuantumTX, and Associate Professor Alfredo Franco-Oregon, principal investigator at NUS iHealthTech. ST PHOTO: JASON QUAH

## Magnetic pulse therapy a boon for the elderly – it beefs up muscles

NUS-invented device helps those who are unable to exercise and are losing muscle

Shabana Begum

Mrs Yvette Cheak, 73, could not stand for long periods of time after suffering four or five falls in a few years which left her right leg weak and knee swollen.

In 2021, a friend with similar leg issues recommended that she try a painless therapy, two years earlier, researchers at the National University of Singapore (NUS) had invented a medical device that sends magnetic pulses through the leg to strengthen muscles without the need for her to exercise.

Every week over three months, Mrs Cheak had a session with the Biceps device, placing her leg inside it for 10 minutes each time.

After just six weeks of therapy, Mrs Cheak noticed that the swelling had gone down and the pain in

her leg had subsided.

"I could stand up for longer periods and walk better. I can now do daily morning walks for 45 minutes and also have the strength to carry my grandson," said the retired compliance officer. She has completed three cycles of the three-month therapy to maintain her limb strength, and is now on her fourth cycle.

Explaining how Biceps (pronounced "biceps") works, Associate Professor Alfredo Franco-Oregon, principal investigator with the NUS Institute for Health Innovation and Technology (iHealthTech), said the magnetic pulses activate a structure in the muscle cells, called the mitochondria, which produces energy. This then triggers a metabolic response in the cells and releases factors called myokines that appear during exercise, he added. Myokines

aid the regeneration of muscles.

Mrs Cheak was among more than 80 patients aged between 38 and 91 who participated in a clinical trial between 2020 and 2022. The trial results showed that the machine helped to prevent frailty and make muscles stronger, especially for the elderly. The average age of the participants was 68.

More than 70 per cent of the participants saw healthy changes. Their skeletal muscle mass rose by an average of 1.2 per cent.

"(Biceps showed) very positive effects in the elderly, and they are the ones who need this technology the most. They are the ones who are less likely to exercise... and they tend to enter this vicious circle of losing more muscle and becoming more frail," said Prof Franco-Oregon.

Each session costs about \$50. The session is limited to 10 minutes to avoid over-stimulating the mitochondria, said Prof Franco-Oregon. A doctor's referral is not needed for the therapy sessions, which are held at QuantumTX's office in Alexandra Hospital and 10 partner centres islandwide. More information about the therapy can be found on [www.biceps.com](http://www.biceps.com).

Mrs Cheak said she was initially sceptical of the therapy.

"I was thinking, 'I'm putting my leg in there and I don't feel a thing'. But after a few sessions, the pain wasn't bad and my muscles felt more relaxed."

In previous trials, Biceps was tested on younger participants with sports injuries and patients who underwent knee surgery. The therapy helped to quicken the athletes' rehabilitation and they could return to training sooner.

But Prof Franco-Oregon reiterated that using the Biceps machine is not a substitute for exercise. Rather, it is more of a solution for those who are unable to exercise and are losing muscle.

Studies have shown that people in South-east Asia develop diabetes at a lower body mass index than other demographics. They hold on to visceral fat more stubbornly than people in other parts of the world despite exercise.

The research team is now conducting a clinical trial with the Singapore General Hospital to investigate how magnetic field therapies can manage the progression of diabetes.

[mshab@ishp.com.sg](mailto:mshab@ishp.com.sg)

## Biceps machine helps athletes flex muscles again

Laura Chia

After injuring his right meniscus three months ago, recreational basketball player Liew Ee Bin did rehabilitation exercises of squats, lifts and stretches on his own at home

do this treatment," said Liew, 47, who owns a consultancy that focuses on healthcare and technology. "By the sixth session, I was strong enough to go back on court. This was in combination with the same exercises I was doing and I think I saved 20 per cent of recovery time."



National cyclist Darren Lim, 22, putting his leg through the Biceps machine at Alexandra Hospital. The device can also be used on arms to promote muscle recovery. Looking on is his teammate Samuel Leong, 19. ST PHOTO: GAVIN FOO



### New tech helps build stronger muscles - sans a workout

Older folk too frail to exercise may benefit from using machine

QuantumTX, a Singapore-based healthcare technology company, has developed a device called Biceps that uses magnetic pulses to stimulate muscle growth. The device is designed for people who are unable to exercise due to age, injury, or chronic conditions. It is used in a clinical setting under the supervision of healthcare professionals.

The device is used in a clinical setting under the supervision of healthcare professionals. It is designed for people who are unable to exercise due to age, injury, or chronic conditions. The device uses magnetic pulses to stimulate muscle growth.

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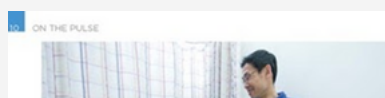


### FROM LAB TO LIFE STAYING STRONG WITH BICEPS

Innovation to Develop (I2D) Project - Bio Ionic Currents Electromagnetic Pulsing Systems (BICEPS) for Human Muscles



QuantumTX invites you to join us and Sit, Click, and Get Fit! (left to right) Team members Janice Yui, Fanni Lee, A, Prof Alfredo Oregon, Dr Jaerg Froelich, Jingzi Li and Ivan Goh.



### IMPROVING RECOVERY AFTER ACL SURGERY

A new treatment is being piloted to improve recovery time and muscle maintenance of those who have undergone anterior cruciate ligament (ACL) knee surgery.

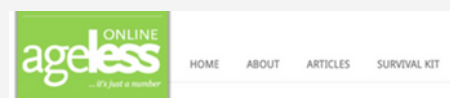


### INSIGHTS FROM NHIC

What were the reasons behind the decision to fund this project?

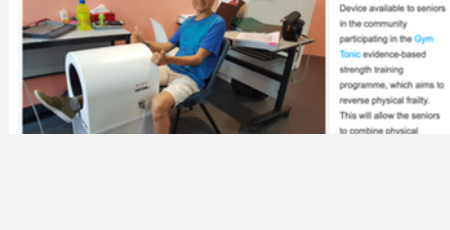
The BICEPS device is exemplary of NHIC's mission of supporting the translation of new innovations that lead to improvements in healthcare. Prior to BICEPS, other existing PEMF devices required hours of daily application for any results, while BICEPS requires as little as 10 minutes of exposure per week to elicit effects.

Are there plans for future implementations of BICEPS? The overall goal is to bring the benefits of the magnetic mitochondria activating platform to various groups in the community, especially those who are unable to



### Improving fitness with BICEPS

With physical exercise, seniors get additional benefits including improvements in muscle strength, gait speed, balance and confidence.



### 運動なしで筋肉強化する機器、国立大らが開発

NUSは、15年前に機器の研究を始めたスイス連邦工科大学チューリッヒ校 (ETHチューリッヒ) の研究者を、3年前にNUSのコン・ルーリン医学部に引き、共同開発に取り組んできた。

磁場エネルギーを利用して筋内の細胞を刺激し、筋力を向上させる機器「バイオ・イオン・カレント・エレクトロマグネティック・パルス・システムズ (BICEPS)」を開発した。国立大学病院の高齢患者 69 人を対象とした臨床試験では、10 週間にわたって週 2 回、10 分間利用すれば効果があがることを確認した。被験者の 85% が、筋力が 1 割以上向上したという。効果がなかった人は 5% にとどまった。

これを受けて、NUS と ETHチューリッヒは特許を申請した。特許の持分比率は NUS が 80%、ETHチューリッヒが 20% だ。製造は地場クオナムTX が手掛ける。20 年半ばの発売を予定している。価格は 1 台当たり 2 万 5,000 円 (約 200 万円) 程度となる見込み。シンガポール以外の国でも代理店を通じて販売していく考えだ。

# CHINESE MEDIA COVERAGE

2023年5月24日 星期三

联合早报



## 国大研发10分钟无痛疗程

# 磁力疗法如练腿改善年长者行动能力

在使用仪器八个星期后，研究对象中有72%的人骨骼肌肉量获得改善，身体的总脂肪和内脏脂肪也减少；85%参与者的运动能力有所提高。

赵世慧 报道  
zhaos@spsh.com.sg

新加坡国立大学研究团队研发新仪器，可利用电磁脉冲信号刺激腿部肌肉，达到类似体育锻炼的效果，帮助身体孱弱、患有慢性疾病的年长者改善行动能力。

患有慢性病或腿脚不便的年长者只须每周把一只腿放入名为磁场线圈调节系统 (BIXEPS) 的仪器中，等待10分钟，治疗全程无痛。

仪器采用专门电磁脉冲信号 (proprietary pulsed electromagnetic field, 简称PEMF) 模拟人体的运动状态，促进患者下肢的血液循环和新陈代谢，逐渐改善他们腿部的肌肉力量。

2020年1月初至2022年10月底，101名年介于38岁至91岁的本地居民在社区研究实验中持续使用这个仪器。参与者平均年龄为65岁，其中87%的人有不同程度的行动障碍。

疗中心接受治疗，约20台仪器已投入运作。

赵清和 (79岁，退休者) 在50岁前患上糖尿病，去年因深静脉血栓导致腿脚疼痛和腿部肿胀。他四处寻医用药无果，去年9月经介绍到亚历山大医院接受新仪器治疗后，病情有所好转。

他受访时说：“那时我需要拐杖才能走路，爬楼梯也得用扶手，一小步一小步地走。经过四次10分钟的治疗，我觉得腿都不痛了，脚也比较轻，可以走两三个小时，还能骑脚踏车了。”

他希望日后的诊疗能有补贴，帮助到更多面对相似问题的同龄人。新仪器的治疗费用为每次50元，三个月共12次的疗程则定价500元。

此外，科研人员正与本地四家社区护理中心合作，让200名年长者参与研究，进一步评估和验证这款仪器在改善运动能力和减缓慢性疼痛方面的功效。

团队也将联手新加坡中央医院，探索以磁力肌肉疗法控制糖尿病的可能性。



在起步公司QuantumTX临床研究员沙兰亚 (Sharanya Venugopal) (左起) 和国大医疗健康创新与科技研究院法兰柯 (Alfredo Franco-Oregón) 副教授的帮助下，患者赵清和接受新仪器治疗后，行动能力有了大幅改善。(张惠庆摄)

2023年5月23日 星期二

新明日报

## 使用电磁脉冲治疗改善年长者行动功能

齐鑫 报道 luluq@spsh.com.sg

新加坡国立大学研究团队发现，对于身体孱弱、不方便锻炼的年长者来说，使用电磁脉冲信号刺激腿部肌肉，能达到类似锻炼的效果，增强肌肉力量，助年长者恢复行动力。

2020年1月初至2022年10月底期间，101位38至91岁的本地居民参与了一项由国大研究团队进行的社区研究。参与者平均年龄为65岁，87%的人在一定程度上行动不便。参与者在12周内，每周接受10分钟的磁场线圈调节系统 (BIXEPS) 治疗。使用者每次将一条腿放入BIXEPS装置，装置会发送电磁脉冲信号，刺激腿部的肌肉细胞。

主要研究员法兰柯 (Alfredo Franco-Oregón) 副教授说，经过12周的治疗后，85%的参与者就出现行动功能上的改善，尤其是年长者。因此，相信电磁脉冲信号治疗能帮助年长者跳出“越虚弱越不敢锻炼、越不敢锻炼越虚弱”的恶性循环。

目前约有20台BIXEPS装置已在亚历山大医院和莱氏药房等10个合作地点推出，使用者每次需付50元治疗费。研究团队也在淡滨尼、慈兰峇株等四个社区关怀中心，选出200名年长者进行进一步试验。



Source: Channel News 8 TV 23 May 2023

## 医疗技术公司加强研发 稳步拓展

周文龙 报道  
chevbi@sph.com.sg

冠病疫情加快数码化的步伐，过去两年不少本地科技起步公司利用疫情这股顺风，筹集到更多资金进行扩展计划。

但同样作为起步公司，本地医疗技术公司QuantumTX这两年却面对许多逆风，不仅业务因疫情而连连中断，也难以取得投资者青睐。

QuantumTX首席执行官吴介文接受《联合早报》访问时有点无奈地说：“同人不同命，我们虽也是起步公司，但在这起步生态环境中，投资者较喜欢金融科技、区块链或人工智能等更吸引眼球的行业，像我们这类以医疗器械为主的起步公司，扩展速度较慢，相对较不吃香。”

尽管如此，他坚持自己的理念，选择寻找志同道合的伙伴合作，加强产品研发并按着公司步伐稳步扩大。

他的坚持如今获得回报，QuantumTX今年入围阿里巴巴创业者基金 / 汇丰JUMPSTARTER 2022环球创业比赛，成为10强队伍之一。



本地医疗技术公司QuantumTX入围了今年的JUMPSTARTER 2022环球创业比赛，是比赛10强之一。右起为QuantumTX首席执行官吴介文、首席工程师李京泽，以及杨禧龄医学院外科学系副教授法兰柯。(龙国雄摄)

Lianze Zhao Bao (9-Jun-2022)

2021年04月20日 星期二

联合早报



孙慧斌 / 报道

邵瑞霖 / 摄影

健康生活与运动息息相关，可是发个健身操你总不动，或上了健身房你总不练，靠身体机能并不容易。

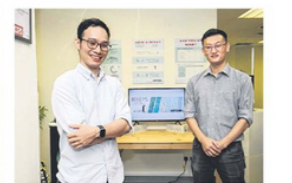
膝关节骨痛或腿脚不便，是许多人的困扰。常常感觉腿脚酸软，常常对膝关疼痛，他接受《联合早报》访问时

说：“以前腿脚以往曾试过通过理疗等方式改善，但成效不大。去年，我将本国的BIXEPS仪器带到新加坡，于是决定试一试。他说：“我前两周用了三个疗程，每次使用10分钟，我不仅腿脚酸软消失了，膝盖也不再疼痛，腿脚也不再酸软。常感觉腿脚酸软，常常对膝关疼痛，他接受《联合早报》访问时

## 新科技协助激活肌肉能量



廖和平 (左) 与何国栋 (右) 面对不同程度的膝关节疼痛，两人通过使用BIXEPS仪器，激活肌肉能量协助缓解疼痛。



QuantumTX首席执行官吴介文 (左) 和首席工程师李京泽 (右) 展示这套仪器的操作。除了包括用户手册，与团队提供使用过的健身贴士外，也提供增加肌肉能量的运动。

说：“最初推出BIXEPS仪器，主要是帮助那些腿脚不便的年长者，以及常患中风的老人，也能借此提高生活质量。而健康的年轻人使用的话，同样会增加肌肉能量，增加肌肉能量的运动。

至于不宜用BIXEPS仪器的群体，主要包括孕妇、身上有心电图起搏器植入患者、癫痫患者，以及不适合使用磁场的患者。李京泽说：“我们通过增加脚踏车功率来衡量12名脚踏车爱好者的12周BIXEPS使用量，显示有92%的脚踏车手的持续输出功率 (sustained power output) 有所增加，而中国国家脚踏车手平均增加2.5%。同时，我们也在跟医疗团队合作，针对腿脚患者，有较少症和骨

质疏松和关节炎的患者开展测试，了解BIXEPS仪器可能的益处。

吴介文说：“我们通过与新加坡脚踏车协会合作，让12名脚踏车爱好者的12周BIXEPS使用量，显示有92%的脚踏车手的持续输出功率 (sustained power output) 有所增加，而中国国家脚踏车手平均增加2.5%。同时，我们也在跟医疗团队合作，针对腿脚患者，有较少症和骨

# AWARDS



by Ageing Asia



by U.S. National Academy Of Medicine



Winner of Healthcare Innomatch 2022



## **1. IS BIXEPS SAFE?**

BIXEPS is safe and reliable. It uses low frequency and low energy electromagnetic fields that are safe and non-ionising (100Hz–10kHz range). These signals have magnetic field strengths that are a thousand times less than conventional MRI equipment, and are at levels similar to those of everyday household appliances like hair dryers or shavers. BIXEPS devices meet international electrical and electromagnetic safety standards (IEC 60601, ICNIRP) and have been certified safe for use by partner hospitals.

## **2. WILL I FEEL ANYTHING WHILE USING BIXEPS?**

The magnetic fields produced by BIXEPS are deceptively mild, but effective. They are within the realm of the natural magnetic fields produced by the Earth, only about 20–30 times larger. Therefore, our fields modulate the same biochemical processes that are governed by the Earth's magnetic fields. Our proprietary technology lies in our ability to finely tune and deliver safe and uniformed BIXEP fields to the desired volumes of muscle.

Different users report having different sensations while using BIXEPS, namely: slight warmth in their muscles, a tingling sensation, slight cooling or numbness in their legs or other parts of the body. A large number of users also report having no perceivable sensation.

BIXEPS is safe and reliable, but should you experience pain or discomfort while using BIXEPS or at any time after, do stop and let your trainer, caregiver or doctor know.

## **3. CAN I USE BIXEPS IF I HAVE IMPLANTS?**

Users with Active Electronic Implants like Pacemakers and Defibrillators should NOT use the BIXEPS device. Persons with passive implants who are able to go for MRI, can safely use BIXEPS.

Dental implants and modern passive implants are non-ferromagnetic and allowably used with much more powerful magnetic medical equipment like the MRI (that operates at field strengths a 1000x stronger than BIXEPS). Some older implants are “weakly magnetic” and are safe for MRI 6 weeks after surgery, these implants are safe to use with BIXEPS too. Users who are uncertain about the type of implants they have, and are unsure about using BIXEPS should consult with their doctors too.

## **4. DO CLOTHING INTERFERE WITH BIXEPS FIELDS?**

No. The fields are designed to safely and gently reach deep into your muscles to activate the mitochondria within cells. These fields are not affected by clothing and shoes.

## **5. WHY IS EACH BIXEPS SESSION ONLY 10 MINUTES?**

Based on our scientific research, 10 minutes of exposure to BIXEPS fields yields optimal benefits. Shorter or longer exposures to the fields have been shown to render less optimum levels of mitochondria activity and therefore have less of an effect.

## **6. IS USING BIXEPS ONCE A WEEK OR TWICE A WEEK BETTER?**

More frequent BIXEPS training sessions can lead to greater gains, but twice as often may not mean twice the benefits. Just like exercise, different levels of stimulation may be more suited to different persons at different levels of fitness and health. Younger or more active persons can benefit from more frequent sessions, as their bodies respond better to the increased challenge and they are able to recover and adapt sooner. Community data has also shown that many seniors gain significant fitness and health benefits from just once a week programmes. Our devices are tuned so users from all ages and all walks of life can get safe & gentle muscle activation in brief 10-minute sessions. Consult your provider on which programme is best for you.

## **7. CAN I USE BIXEPS ON BOTH LEGS IN A SINGLE SESSION?**

Certainly! But more is not always better. Our research has shown that weekly, single-leg activation programmes are sufficient to induce significant benefits for the majority of the users. As with exercise, each 10-minute BIXEPS session causes our muscles to release a variety of regenerative and metabolic enhancing factors collectively known as Myokines. These signals travel throughout the body and trigger adaptation from non-exposed regions too. Users get fitter and healthier as their bodies adapt to the Myokine signals, but the rate and extent of improvements can depend on many factors like the user's existing health and lifestyle factors (e.g. diet and exercise). While activating both legs will result in more Myokines being released, studies have shown that often "a little goes a long way" and the body's response does not scale linearly to the amount of Myokines in the body.

As such, we often recommend users to start with single-leg sessions of BIXEPS, especially for frail or more sedentary users, to allow the body to adapt to this added form of BIXEPS training. This same phenomenon is well-known in the field of exercise science and sports, where training more than one muscle groups in a single session is discouraged. While this leads to an increase in the adaptation of the muscles directly exposed, it may not necessarily result in faster systemic benefits.

## **8. WHY MUST I USE BIXEPS ON MY LEG AND HOW DOES THE REST OF MY BODY IMPROVE?**

BIXEPS magnetic mitohormesis works by activating the mitochondria within muscle cells. This activation helps to increase energy production in muscles that supports muscle repair and regeneration. Also, activated muscles release signalling molecules, known as Myokines, that circulate throughout the body to encourage systemic benefits such as enhanced metabolism. We target the upper thigh region, which is often the largest mass of muscles for many users, to effect the most Myokines release per session and to encourage larger benefits on our health and well-being.

MORE FAQS



## **9. CAN I REPLACE MY REGULAR EXERCISE PROGRAMME WITH BIXEPS?**

BIXEPS is NOT a replacement for physical exercise. Physical exercise gets our heart pumping and our blood flowing. Endorphins are released that elevate our mood. Physical activity also improves communication between our nerves and muscles. BIXEPS is designed to improve the efficiency of energy production in muscles that will in the long run facilitate and accelerate your journey towards a healthier and more active lifestyle.

## **10. WILL BIXEPS HELP MY MUSCLES TO BECOME BULKIER?**

BIXEPS can help to increase your muscle mass. On average, users who are older and more weaker tend to see a greater increase in muscle mass. However, this increase in muscle mass will not cause your muscles to appear bulkier.

BIXEPS magnetic mitohormesis improves muscle energetics, encouraging muscle endurance and its ability to withstand fatigue, but does not directly translate into an increase in muscle size. In fact, fatigue-resistant muscle is often leaner than other muscle types. Because BIXEPS provides muscles with more energy, you might find yourself being able to train harder and longer, and experience faster recovery post-exercise. BIXEPS has been used by athletes to improve their recovery and training outcomes.

## **11. HOW LONG WILL I NEED TO CONTINUE USING BIXEPS?**

While BIXEPS-related adaptations begin at the cellular level from the time your sessions commence, larger functional improvements may take time to build and consolidate, depending on individuals starting state, desired goals.

## **12. IF I STOP USING BIXEPS WILL MY MUSCLES WEAKEN AGAIN?**

Just like exercise, once you stop your BIXEPS sessions, your body will recalibrate and adapt to your new lifestyle. We recommend using your new found fitness capabilities to increase your levels of physical activity, empowering your journey towards a more active and healthy lifestyle.





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Rev 04



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