

As the 46-year-old singer reveals a shockingly muscle-bound

What HAS Madonna

THE device gets its nickname from one of the Middle Ages' more notorious instruments of torture. And judging by its many pulleys and wires, 'The Rack' is an apt pseudonym. But for Madonna — who last night took to the stage at London's Earls Court — it has proved a vital tool on her world tour.

The Gyrotonic Expansion System, to give it its correct title, has helped hone the mother-of-two's body for the rigours of performing live.

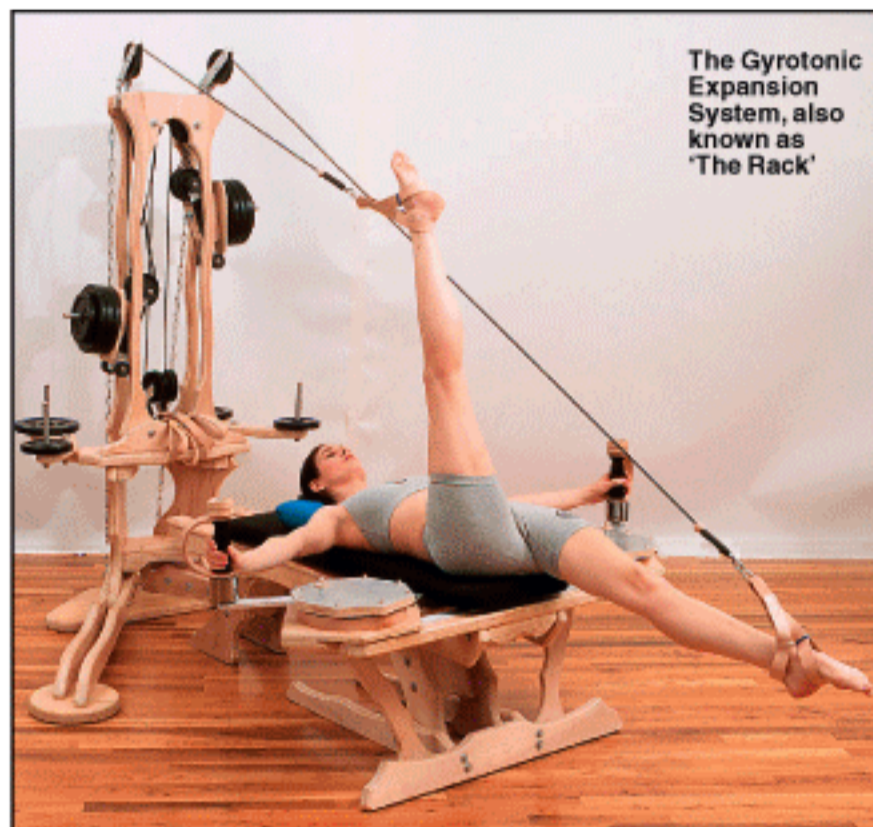
The £3,500 contraption was designed by Romanian

ballet dancer Juliu Horvath to help relieve the chronic pain he suffered from injuries.

Exercising with the machine allows for the natural circular motion of limbs. It is said to create long, lean muscles which are toned but not bulging.

Matt Aversa, director of manufacturers Gyrotonic, says: 'Gyrotonic training creates muscles with suppleness and dexterity. This will decrease the chance of injury, and prepare Madonna's body for what she does.'

However, Gyrotonic is just the latest exercise regime in Madonna's relentless pursuit of the perfect body. Here, we reveal the effect that quest has had on her figure and her health.



The Gyrotonic Expansion System, also known as 'The Rack'

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FITNESS

'MADONNA looks like an Olympic athlete,' says fitness consultant Cornel Chin, who trains stars such as Leonardo Di Caprio. 'But to have such a physique, she must be putting in a similar level of effort — if not more, to compensate for her age.'

In the past Madonna was known as a fan of extreme exercise, running 20 miles a week, working out for hours on a step machine and pumping iron every day, not to mention rehearsing gruelling dance routines.

Now, she is one of the most advanced ashtanga yogis in the country. She is so experienced in this physical form of yoga that she is on the 'Third Series' — a level equivalent to being an Olympic-standard athlete.

'She's 46 now, and must be exercising for at least three hours a day,' says Cornel. 'A couple of hours will be aerobic exercise — that's how her body fat levels have dropped to such

an extent that her muscles have become prominent. I think Madonna's body fat level can only be about 17 per cent, which is well below the 23-33 per cent ideal for women.

'She will also be doing a lot of weights to bulk up her muscles. But she needs to be careful. Joints are increasingly at risk as you age. Production of synovial fluid, which lubricates the joints, and glucosamine, which is a nutrient essential for joint health, starts to slow.

'Madonna will have to spend longer on her warm-ups than when she was younger, and less time doing high-impact work such as running and step aerobics, or she could trigger the early onset of arthritis. 'Of course, exercise is vital to staying healthy. But there are limits, and Madonna is at risk of "overtraining syndrome" — a form of chronic fatigue linked to intensive exercise and inadequate rest periods.'

YOGA

'MADONNA is a devotee of ashtanga yoga, a Western adaptation of traditional forms of yoga,' says instructor Chris James, who is based at North London's Yoga Junction. 'It focuses on developing upper body strength. But from the level of definition you see in her arms, she must be employing other techniques such as a rigid diet and weight-lifting. Her muscle tone is the result of an exercise regime that must border on the obsessive; a woman would need to spend virtually all day exercising to achieve such a muscular look through yoga alone. Practising yoga is about achieving a certain level of balance — which Madonna, despite her devotion to the exercise, clearly hasn't achieved.'



figure during

her latest tour, the Mail asks ...

done to her body?



HAIR

MADONNA'S naturally wavy brown hair has emerged virtually unscathed from all the years of colouring she has put it through. 'She has often done more to her hair in one month than other women would do in a decade,' says celebrity hairdresser Martyn Maxey, whose salon is based in London's Grosvenor Street. 'But her hair remains shiny, full and glossy, which shows it is essentially healthy — despite all the peroxide it must have been subjected to. Peroxide is a vital ingredient in hair dye and works by opening up the outer layer of the hair, the cuticle, so that the colour can be absorbed by the inside of

the hair. Over time, with more and more peroxide use, the cuticles start to disintegrate and the hair becomes dry, brittle and unable to hold any colour. 'Madonna is lucky that the structure of her hair hasn't been destroyed by all the colour. She has no doubt reduced the damage by having as many restorative treatments as possible, such as intensive conditioners and protein treatments that help nourish and protect the cuticles. 'Most women's hair thins with age, and also for a couple of years after childbirth — but again, Madonna has been lucky. Her hair is still one of her best features.'

FACE AND SKIN

'ON A woman of 46 you would expect to see jowls, lines across the forehead, and eyebrows which are beginning to droop,' says Adrian Richards, a plastic surgery consultant and skin expert based in London's Harley Street. 'That's especially the case for someone who has done a lot of running, which loosens skin and muscle due to all the pounding, and general exercise, which increases the body's production of free radicals, the atoms which can damage cells and speed up the ageing process. 'Madonna doesn't show such signs, although there was a period when she was looking more worn than she does now, which suggests some sort of treatment. 'I don't think she's had a facelift, because her lower face doesn't look that stretched or perfect, but she has definitely had a less invasive treatment. 'Eyebrows that have retained such an arch,



and a totally smooth forehead, are usually an indicator of Botox treatment, as is a lack of vertical lines between the eyebrows. 'Madonna is also likely to have regular facials using products that contain the anti-ageing ingredient Retinova, which helps reduce fine lines and sun damage, plus more extreme treatments such as skin peels, which remove the outer layers of the skin to reveal the smooth, unlined layers beneath. 'Madonna does have prominent nose-to-mouth lines, though, which suggests she hasn't had any facial fillers.'

BREASTS

'SHE looks like she's had breast implants,' says plastic surgery consultant Adrian Richards. 'Ten years ago, her breasts were quite small and pert, with a small base — they didn't stretch across her chest as they do now. Natural physical changes, plus childbirth, weight loss, and the toll that high-impact exercise takes on breast tissue, would have resulted in smaller, sagging breasts over the years. But instead, they appear much fuller. 'Another give-away is the condition of the skin on her breasts. After childbirth, especially with older mothers, the skin across the breast becomes saggy and flat. But Madonna's is smooth and lean, because the tissue underneath has been filled up with implants. There is no way she could have achieved her buxom look with just the help of Mother Nature.'

BODY FAT

'MADONNA'S level of body fat is far lower than average,' says Kim Ramessa, an expert from Tanita, which produces body fat monitors. 'A healthy range of body fat is 23-33 per cent. It's impossible to make a precise estimate, but her incredibly defined and muscular arms suggest that she falls well below that range.' Dr Sarah Brewer says everyone needs some body fat to be healthy: 'It's vital for basic body functions such as regulating body temperature, storing vitamins, providing energy and cushioning joints and organs. 'If body fat levels fall too low, women are put at increased risk of osteoporosis and fertility troubles.'

LEGS

'MADONNA'S leg veins could be a result of her exceptionally low level of body fat, which would make veins more prominent,' says Cornel Chin. They could also be the beginnings of varicose veins, according to Dr Sarah Brewer. This condition develops when veins, which carry blood back to the heart, become blocked and swollen, and blood pools in them. Varicose veins are made worse by childbirth, age, and standing for long periods of time — it's harder for your body to pump blood away from your lower legs due to gravity. 'Varicose veins can be painful and prevent blood from circulating efficiently,' says Dr Brewer. 'They can be removed in a simple procedure under general anaesthetic; mild cases can even be treated by injecting the veins with a special liquid which closes them.'

DIET

MADONNA follows a strict macrobiotic diet — a regime which combines wholegrain cereals, pulses and soy products into meals according to a principle of Tao 'yin and yang' balance. Ideally no animal products except fish are consumed; refined flour, sugar and dairy products are banned. 'While this isn't the sort of diet to guarantee rapid weight loss, it's a very restrictive way of eating,' says nutritionist Fiona Hunter. 'Madonna is missing out on all the benefits to be had from meat and dairy produce. She will be lacking in calcium, which could

compromise her future bone health, while lack of wheat puts her at risk of vitamin B deficiencies, which result in fatigue, memory loss and digestive problems. 'Furthermore, anaemia can result from not eating red meat, because although you can get iron from vegetarian sources such as cereals, pulses and spinach, you have to work much harder to get it.'



Picture: CASARAZZI PHOTOS