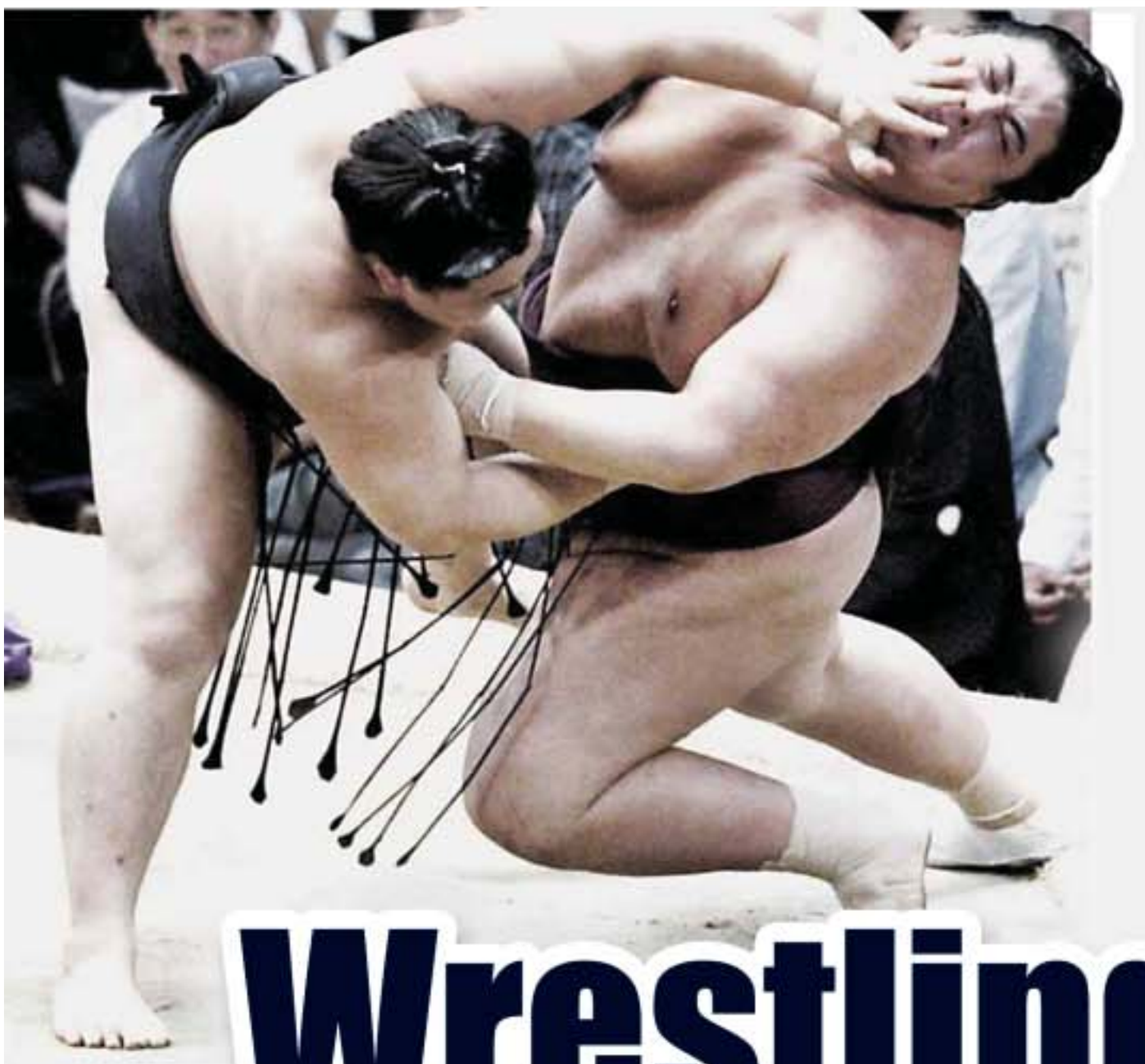

Wrestling With Health Issues

Andy Ho in Singapore
The Straits Times/ANN

Sumo wrestlers look obese but are highly conditioned athletes. Can obese be healthy?

A recent analysis, pooling together 57 studies involving 900,000 participants from four continents, confirmed "once and for all... obesity shortens lifespan".

Obesity, according to World Health Organisation criteria, is the condition in males with over 25 per cent body fat and women with over 35 per cent body fat.

To measure body fat, you just have to sit inside the BodPod, a human-size, computerised egg-shaped pod that uses the Archimedean 'Eureka' principle— how much air you displace.

After I wrote recently about how the pod is big enough for a sumo wrestler in The Straits Times, a reader posed this question: These wrestlers look obese but are highly conditioned athletes. Can obese be healthy?

Beginning their careers in late adolescence, these professional sportsmen build up their muscles with intensive exercise. Their body size—fat mass included—is bulked up through an extraordinarily high-calorie diet of 5,500 calories in two huge meals a day. By contrast, the average Japanese diet has only half the calories.

Sumo wrestlers train for three hours before breakfast, burning reportedly 1,400 calories. This is followed by a huge breakfast consisting of a special stew that is super-rich in protein, usually chicken, fish, tofu, beef and vegetables. To maximise weight gain, afternoons are spent restnoons are spent resting.

On average, today's professional sumo wrestler is 177cm in height and 114.5kg in weight. Unlike in Western wrestling, there are no weight categories in sumo wrestling, so a bigger bulk offers an edge that could be crucial in matches, which may last only 10 to 15 seconds each time. One is instantly defeated when any part of one's body crosses the ring boundary.

The initial impact of a push to force one's opponent, especially a heavier one, out of the ring can often be determinative. While punching, choking and kicking the upper body are not allowed, thrusting blows are.

The larger one's lean muscle mass, the greater the momentum of one's thrust. And the greater one's total body mass, the larger one's inertia, so it will be harder for the opponent to lift one out of the ring. Thus, training aims to build up muscle bulk and power - though the diet transforms them into chubby mountains.

A 2000 study showed that these wrestlers have muscles that are 18-35 per cent larger than that of non-wrestlers. These bigger muscles also burn up more energy, even at rest. A 2007 study by Japanese researchers showed that, because their muscles were metabolically far more active at rest, sumo wrestlers expended, on average, 2,300 calories at rest a day against 1,500 calories in non-wrestlers at rest.

Thus, when their strenuous training is taken into account, sumo wrestlers may well be taking in only about 800 calories more than non-wrestlers do every day. But that would still pack on the weight, of course.

Calories apart, a major health concern should be over their hearts. After all, a lot of obesity-related mortality comes from heart disease.

In all of us, the left side of the heart is always thicker than the right because it works harder to pump blood throughout the body compared to the latter, which only pumps blood through the lungs. Research shows that the left side of the heart of sumo wrestlers—like most top athletes—is more muscular than most people's.

Unlike other elite athletes, though, the cavities of their left hearts are very capacious as well. This condition afflicts the flabby hearts of the very obese too. Unlike the latter though, sumo wrestlers have normal heart functions.

This unusual combination of a very capacious left side of the heart (seen in the very obese) and normal heart function (which the very obese do not have) because of over-developed left heart muscles (seen in top athletes) was first reported in the American Journal of Cardiology in 2003.

So while they may be overweight, they are not obese and are, in fact, healthy athletes? This would generally be true of the top-ranked sumo wrestlers.

Sumo wrestlers fall into six divisions, not by weight but by skill level. A 1999 study showed that those in the top two divisions had significantly less fat compared to those in the lower divisions. The former had, on average, just 23.5 per cent body fat, so they were not obese at all. In one wrestler, it was even as low as 10.3 per cent.

Overall, though, based on body fat ratios, 55 per cent of sumo wrestlers were in fact obese. Unsurprisingly, then, a 2003 study published in the British Journal of Sports Medicine reported a far higher prevalence, on average, among sumo wrestlers than the general population of Syndrome X—the combination of high levels of blood lipids, diabetes and hypertension that raises the risk of heart problems.

The study also found their average life expectancy to be 10 years shorter than that of Japan's general population, with very high mortality rates from the ages of 35 to 74. (Most sumo wrestlers retire before their late 30s.) A study published in *Prevention* in 2006 put that difference even higher—at 20 years.

In retirement, their strenuous training schedule and extreme diet are both set aside, so their bodies drop in size. What impact this has on their health is not really known. In other elite athletes, retirement sees their left heart muscles lose their increased bulk over time. But since their left heart capacity was normal all along, their heart function is not compromised.

In retired sumo wrestlers, the same left heart muscle mass reduction presumably also ensues. But what about their extra-capacious left hearts? It is not known how major a role this plays in their higher mortality rates after 35.

Overall, however, it seems likely that no one gets away scot-free after subjecting the body to extremes for decades.

Flying frog and mountain mouse among new species in danger of going extinct

A mouse found in the mountains of Madagascar, a lizard that can run across water and a flying frog have all been added to this year's 'red list' of species in danger of going extinct.

By Louise Gray, Environment Correspondent

Every year the International Union for Conservation of Nature (IUCN) compiles a list of the animals and plants that are in danger of being lost forever.

This year the list is longer than ever, with 17,921 species in danger of going extinct including well known mammals such as pandas, tigers and rhinos.

Recent additions to the list include the eastern voalavo, a newly-discovered rodent that lives in the mountain forests of Madagascar but is being driven out by slash and burn agriculture. The Philippine sail-fin water lizard, that has flattened toes to enable it to run across water, is targetted for the pet trade and local cosumption. Rabb's fringe-limbed treefrog from Panama, that uses its huge webbed hands and feet to sail down from the canopy, is also in danger from deforestation.

The IUCN carried out its most ambitious assessment this year, looking at almost 48,000 species in total. The number of animals in danger rose from 16,928 to almost a third at 17,921.

Amphibians are the most threatened group with 1,895 out of 6,285 species in danger of extinction, mostly because of a dangerous new fungus that is killing rare frogs and toads.Already the golden toad from Costa Rica has gone extinct and hundreds of brightly coloured treefrogs in the Amazon are endangered.

Reptiles are dying out fast due to agriculture and development. This year 293 lizards and snakes only found in the Philippines were added to the list including the Panay monitor lizard. Insects are also suffering and there are now 7,615 invertebrates on the red list. This year scientists added 1,360 dragonflies and damselflies, including the Giant Jewel dragonfly found in Nigeria and southwest Cameroon, largely due to deforestation.

Climate change is thought to be affecting many plants and animals. The Queen of the Andes, one of the 8,500 plants in danger of extinction, only produces a seed every 80 years and is dying out due to temperature rise.

Of the world's 5,490 mammals, 79 have already gone extinct and a further 1,142 are threatened with dying out.

Already since the 16th Century, 875 known species have died out, including 11 that were reported extinct this year.

The kihansi spray goad, that once gathered in their thousands beneath the waterfalls of Eastern Africa, is now extinct in the wild. Ten Polynesian tree snails have also gone extinct in the last year.

Craig Hilton-Taylor, Manager of the IUCN Red List Unit, blamed habitat loss due to agriculture or expanding human population, pollution and climate change.

"These results are just the tip of the iceberg," he said. We have only managed to assess 47,663 species so far; there are many more millions out there which could be under serious threat. We do, however, know from experience that conservation action works so let's not wait until it's too late and start saving our species now."

Five species added to the IUCN red list this year:

:: Panay monitor lizard (Philippines) - One of 293 reptiles only found in the Philippines added to the list.

:: Rabb's fringe-limbed treefrog (Panama) - One of the latest amphibians to submit to a dangerous new fungus and deforestation.

:: Sail-fin water lizard (Philippines) - Hatchlings are heavily collected both for the pet trade and for local consumption.

:: Giant jewel dragonfly (Nigeria) - One of 1,360 dragonflies and damselflies added this year.

:: Eastern voalavo (Madagascar) - A newly-discovered rodent that is being driven out by deforestation of its mountain home.

Rabbs Fringe-limbed Treefrog (Ecnomiohyla rabborum)