ARBiT
it happens here...

International Mother Language Day

It's hard to imagine the challenges faced by students who have been ordered to learn in a foreign language, as without linguistic inclusion, there is no equal access to education. Current International Mother Language Day events include multicultural festivals, which promote hearing of all voices, and display social cohesion, cultural awareness, and tolerance. The unique nuances and subtleties of linguistic communication, which connect individuals to culture and personal identity, are valued and encouraged.

राष्ट्रदूत
FRIDAY
21 February 2025
A-B

#HEALTH

Could dancing 20 minutes daily in your kitchen be enough to meet fitness goals?

WHO recommends adults should do 150-300 minutes of moderate or 75-150 minutes of vigorous activity per week. Many relate this to jogging, going to the gym, swimming, or other physical activity. But the study found dancing is just as effective.

Do you struggle with going to the gym religiously? Are you looking for an easier way to hit your weekly fitness goals? Well, you could reach your exercise goals by just dancing. According to a new study conducted by scientists from Northeastern University in Boston, Massachusetts, dancing in your kitchen for 20 minutes every morning could be enough to make you fit.

Dancing as effective as other exercise forms

As per current guidelines suggested by NHS (National Health Service), adults should complete 150 minutes of moderate to vigorous-intensity exercise per week. Meanwhile, WHO recommends that adults should do 150-300 minutes of moderate or 75-150 minutes of vigorous activity per week. Many relate this to jogging, going to the gym, swimming, or other physical activity. But the study found dancing is just as effective.

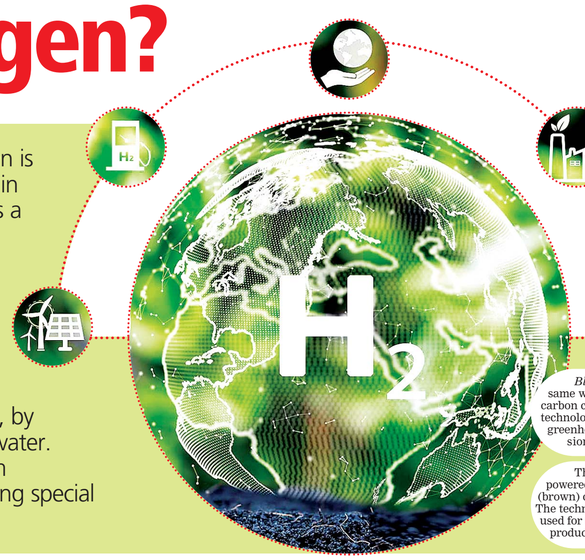
The study

The researchers recruited 48 participants aged 18 to 83 years. They investigated how much time you would need to spend casually dancing to constitute 'moderate' exercise. Their experience ranged from none to 56 years of dance training. They were asked to participate in five-minute bursts of dancing, with and without music.

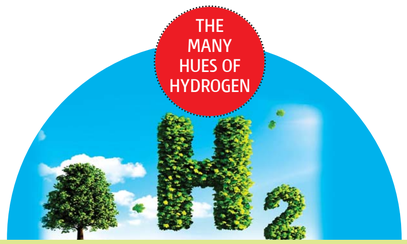
The participants' oxygen intake and heart rate were measured by the scientists to determine the intensity of the exercise during the sessions. The data showed that all participants reached at least a moderate physical activity level while dancing.

As per the study author, Dr. Aston McCullough, from Northeastern, "The main idea was to understand whether the intensity that people would receive from dancing freely on their own be enough to be a health-enhancing physical activity. And the answer was 'yes.' All adults were able to reach a health-enhancing level of activity without being told what intensity to dance at." He told the American Association for the Advancement of Science (AAAS) conference, "They just put on their own music and danced around, and even when they didn't have music on, they were still reaching that level. The main idea for us is that dance is a really accessible form of physical activity that people can do, even in their homes." "Most people think of dance as something that is light and really easy, but really if you just tell someone to 'have a dance,' they're going to get to that level of intensity that you would ask them to do, if you were a personal trainer," Dr. McCullough concluded.

Why is everyone talking of Hydrogen?



The other big advantage of Hydrogen is that, unlike fossil fuels, it is available in plenty, all across the world, since it is a component of water and can be extracted from ocean water. This extraction is fairly straightforward and has been known for quite some time. It is called Electrolysis and basically consists of splitting the water molecule into its components, Hydrogen and Oxygen, by passing an electric current through water. Hydrogen can also be extracted from hydrocarbons such as fossil fuels, using special chemical and physical processes.



In our schools' science class, we had been taught that Hydrogen is a colourless and odourless gas. Then, what is all this Green Hydrogen about? The classification of Hydrogen by colour refers to the process by which it is produced, the raw material used and the Carbon footprint of the process. The following are the most common Hydrogen colors and what they refer to.

This simply refers to naturally occurring H2. **White**

This is a form of H2 produced through water electrolysis, powered by renewable energy such as wind or solar. No greenhouse gas emissions are produced when making *green hydrogen*. **Green**

Grey hydrogen is made using virtually any fossil fuel except coal (see brown/black below). It uses Steam Methane Reforming (SMR) and can produce a substantial amount of carbon dioxide and other greenhouse gases. **Grey**

Blue hydrogen is made in the same way as grey, only it uses carbon capture and storage technology to take most of the greenhouse gas from the emissions and store it underground. **Blue**

This hydrogen color refers to thermal splitting of methane using methane pyrolysis. This method removes carbon in the form of a solid, instead of a gas, and remains an experimental method of H2 production. **Turquoise**

This H2 is made using methods powered by bituminous (black) or lignite (brown) coal. The technique used for H2 production is called coal gasification. **Black or Brown**

N.N. Sachitanand
Senior Journalist

The winds of climate change triggered by the combustion of fossil fuels have brought in their wake a slew of investments in alternate sources of energy across the world in the last five decades. Wind, solar, nuclear, subterranean heat, ocean waves and the good old hydro have all received attention and capital. On the horizon is nuclear fusion, though, that is still a faraway goal.

However, during the last decade, one source of alternate energy, that has garnered investment attention of both governments and private enterprise, is Hydrogen, the primordial element from which all other matter has subsequently arisen.

Why *Hydrogen*, one might ask? Because, it has a much higher energy to weight ratio as compared to fossil fuels. When combusted to generate energy, the waste product is non-polluting water. Fossil fuels, on the other hand, are mainly made up of Hydrogen and Carbon, and when combusted, generate oxides of Carbon as waste, which pollute the atmosphere and end up causing climate change.

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Currently, of the world Hydrogen production capacity of 97 million tonnes per annum (MTPA), hardly 1% is Green Hydrogen. However, both China and the EU nations are ramping up Green Hydrogen capacity and the International Energy Agency expects that by 2030, production capacity of Green Hydrogen will reach 49 MTPA. India has a modest target of reaching 5 MTPA by 2030. Unfortunately, against the advantages of Hydrogen as an energy source, there are a number of problematic issues as to its commercial deployment. First of all, the extraction processes themselves are energy intensive, rendering the extracted Hydrogen expensive. For example, Hydrogen from electrolysis can cost anywhere from 6 to 17 times that of gasoline on an energy equivalent basis.

One of the reasons why fossil fuels are preferred for transport applications is their high energy density (heating value per unit volume) at room temperature and pressure. Hydrogen, on the other hand, has the lowest energy density of any fuel. It needs to be compressed by a factor of 3 to compete with natural gas, a factor of 8 to compete with propane and a factor of 2800 to compete with gasoline.

Naturally, all this compression needs energy and adds to its cost. Therefore, even if one were to consider that the combustion efficiency of Hydrogen in an internal combustion engine is 40 per cent higher than gasoline, the compression costs involved are still too prohibitive.

Then, there is the question of cost of commercial transport of Hydrogen. Since it is a very rarefied gas at room temperature and pressure, for transport of meaningful quantities of the fuel, the gas volume will have to be drastically reduced by compression and even liquefaction.

This will consume tremendous amounts of energy. If the storage is in liquid form, very expensive special cryogenic containers are needed since liquid hydrogen turns into gas at minus 252 degrees Celsius. All this will, of course, reduce the cost advantage of higher combustion efficiency of hydrogen.

There has been some research interest in the past two decades on developing materials that can absorb large amounts of hydrogen at room temperature and pressure, and release it for use when needed, with the application of some heat.

Materials under investigation in this area are Metal Hydrides and Metal Organic Frameworks. However, there is still a long way to go to reach a minimum Hydrogen absorption level of 8.5 per cent of the weight of the absorbing material to make this tactic viable.

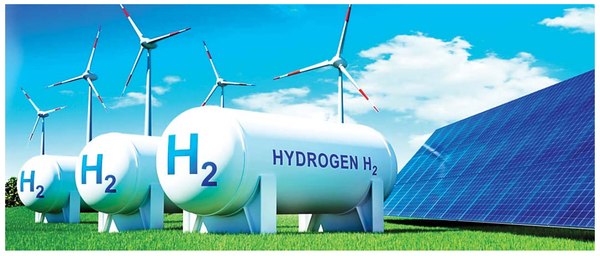
Currently, the cost of producing Hydrogen varies from $2 to $8 per kg., depending on the raw material, process, scale of production and government subsidy. To this must be added storage and distribution costs to the ultimate user in order to evaluate the competitiveness of the gas vis-à-vis conventional fuels.

According to some estimates, unless Hydrogen production costs hit below $1 per kg, the gas will not be a competitive fuel as far as transport is concerned. At present, when it comes to the mobility sector, electric traction is superior in terms of cost-benefit ratio when non-polluting energy sources are compared. Experts in the field reckon that, considering the significant advances in electric battery technology, it may not be before 2050 that Hydrogen, as a mobility fuel, becomes economically advantageous, taking into account cost of dealing with spent batteries.

Another area of worry about using Hydrogen is safety. Because the gas is very volatile, of extremely low density and highly inflammable, it can easily escape from containment and cause serious fire accidents.

Keeping it inside tanks and piping requires precision engineering, high-technology seals, perfect assembly, and constant maintenance. Checking all of the things, which might loosen and cause leaks, will require partial disassembly of vehicles, adding to already high maintenance costs.

#SAVE EARTH



South Korea took the lead in using Hydrogen as mobility fuel, backed by government funding under a Hydrogen Economy Roadmap, formulated in 2018, which had set ambitious targets, including 6.2 million Hydrogen fuelled vehicles and 1,200 refuelling stations by 2040. According to an analysis by Bloomberg in December last year, none of the targets have been remotely close to being met.

To make matters worse, there have been several explosions and fire accidents in the last five years due to hydrogen leaks in vehicles as well as refuelling stations. In a recent re-inspection of Hydrogen fuelled cars in that country, 1,463 out of 9,482 were found to have Hydrogen gas leaks.

India commenced its Hydrogen campaign with the launch of the National Green Hydrogen Mission in January 2023, with an outlay of Rs. 19,744 crores and the objective of establishing an initial production capacity of 5 million tonnes per annum of Hydrogen. Much of this capacity will come from using electric power from non-fossil energy sources like solar, wind, waste biomass or hydel. (See Box for explanation of Green Hydrogen.)

It is the fond hope of the proponents of the Mission that Hydrogen will become a substantial player in attaining the national goals of independence of imports of energy by 2047 and net zero emissions to the atmosphere by 2070.

As we have seen from the South Korean experience, that is an ambition that appears a bit far-fetched as far as the transport sector is concerned. However, there is a good scope for reducing the use of hydrocarbons by substitution with Hydrogen in certain industries such as those producing ammonia (used in making fertilizers) and steel. This could not only reduce the Carbon emission from these industries, but also make their products more amenable for exports to developed countries, who have started imposing barriers to import of products made by high Carbon footprint processes.

In steel making, for example, the conventional process followed in India is to use coke as an agent to reduce the iron oxide in ore to iron. This coke can be substituted by Hydrogen. This could also cut the demand for coking coal, the mining of which is, itself, a highly polluting industry. That is why, steel and petrochemical companies are among the forefront in India to jump on the Hydrogen bandwagon.

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#CLEAR & CONCISE

Fewer Words, More Impact

Far from being cold or brusque, clarity of language shows confidence in your message and helps others align with your vision.

Ever find yourself trying to sound diplomatic or softening your message with a thousand words? Imagine a kid chasing a baseball into a busy street and the dad saying, "Well, you might want to slow down and rethink that son..." as the cars are screeching to a halt. We get it, you don't want to hurt anyone's feelings. But here's the reality, more words often don't help. Instead, they can dilute your message and leave people unsure of where you stand.

When you're clear and concise, you show respect for people's time and give them the clarity they need to take action. Being brief doesn't mean being cold or uncaring. In fact, it's often the most respectful and effective way to lead.

Who are you really protecting?

Here's the kicker! When you use more words than necessary, it's easy to assume that you're protecting the other person from discomfort. In truth, you're protecting yourself from whatever bad things you imagine might come with being clear and concise, being disliked, feeling discomfort, and being criticized.

To be clear (pun intended!), clarity is not about being harsh. It's about being authentic, honest, and decisive. It's about showing up with integrity and respect for both yourself and others. Kindness doesn't need extra words, it just needs truth.

Here are three examples where less is more.

Example 1: The decision

Wordy and vague: "Well, I've been thinking about it for a while, and there are a lot of good options. I'm not sure, but I can see how this one could work."

Concise and clear: "Let's move forward with this option. Here's why..."

Example 2: The feedback

Wordy and vague: "I noticed that we missed the timeline in a few places. There might be a lot of factors influencing this, and maybe, there's a way we can fix it going forward."

Concise and clear: "We missed our timeline. Let's work together to improve time management moving forward."

Example 3: The yes or no

Wordy and vague: "I'm really torn because there's a lot going on right now, and I want to help, but there's a lot on my plate, so maybe, I can get back to you on this after I check in with a few other things."

Concise and clear: "I'm unable to take this on right now. Let's find another way to make it happen."

The practice: "What did you hear?"

Here's a simple and powerful tool! After speaking, ask the person, "What did you hear?" This little practice helps ensure that your message landed clearly. It also opens up an opportunity for clarification because we've all experienced those moments when what we said didn't quite match what was understood. This practice encourages connection and ensures that you're both on the same page.

7 Ways to communicate better with fewer words

1. *Identify your core message.* Before speaking or writing, take a moment to identify the key message you need to convey. Write down the one thing you want the other person to understand or act on.
2. *Eliminate qualifiers.* Stop softening your message with qualifiers like 'I think,' 'maybe,' or 'possibly.' Replace them with more direct language. For example, instead of saying, "Maybe, we should consider doing this," say, "We will do this."
3. *Cut out unnecessary words.* Review your communication and remove anything that doesn't add value. Shorten your sentences and get straight to the point. Challenge yourself to deliver the same message in fewer words.
4. *Practice saying 'no' concisely.* Get comfortable with saying 'no' without over-explaining or justifying. You don't need to apologize or offer an excuse. Simply say, "No. This doesn't align with my current priorities." The more you practice, the easier it gets.
5. *Pause before responding.* When engaging in conversation or meetings, pause before responding. This gives you time to gather your thoughts and decide what you want to say. This pause can help you avoid rambling and deliver a more concise, powerful response.
6. *Clarify and summarize.* After giving your message, follow up with a quick summary to ensure that everyone is on the same page. For instance, "To be clear, our decision is to focus on X." This reinforces your message without over-explaining.
7. *Reaffirm your commitment to conciseness.* At the beginning of each day or meeting, remind yourself, "I will prioritize clarity in my communication today."

Communicating like a Leader

Using fewer words doesn't mean you're being less compassionate. When you're concise, you respect others enough to get to the point, which builds trust and fosters a culture of respect. There is nothing kind or compassionate in ambiguity. Clarity shows confidence in your message and helps others align with your vision. You can be kind, compassionate, and connected, and be clear and concise at the same time.

THE WALL

BABY BLUES

By Rick Kirkman & Jerry Scott

ZITS

By Jerry Scott & Jim Borgman