

# Junior hockey WC is a stepping stone to future success for youngsters, says coach Sreejesh

**NEW DELHI:** Indian men's junior hockey team chief coach PR Sreejesh on Friday advised his wards to consider the upcoming World Cup as a stepping stone in their careers, keeping their sights firmly set on the 2028 Los Angeles and 2032 Brisbane Olympics.

The veteran goalkeeper, who represented India in four Olympics winning two back-to-back bronze medals in the Tokyo and Paris Games, said handling pressure and gaining experience will be the most important learnings for the youngsters from the Junior World Cup.

"For the juniors this is one of the greatest milestone of their career because from here the journey starts for



senior level. One thing I always tell these guys is dream about 2028 or 2032 because you are not meant to be juniors forever. "They have a long vision about their future, their career but this is one of the best stepping stones for them from where they can start their career," Sreejesh said in a virtual media interaction after India announced an 18-member team under the leadership of drag-flicker Rohit for the marque event.

"I always tell them dream big. There are a lot of players in the senior team who never played a Junior World Cup. This is a place where you gain experience because this is a World Cup. It will give them experience, teach pres-

sure management, how to overcome challenges. This is a great platform for them," he added.

The FIH Junior Men's World Cup will be co-hosted by Chennai and Madurai from November 28 till December 10. The 37-year-old legendary goalkeeper has seen it all during his illustrious career, be it success, failure, pressure or disappointments. As a coach, he is trying to help the youngsters understand how to cope up with these things.

"And second thing we are training them to win, to match expectations. We are training hard to win the tournament so that they get more confidence. Junior World Cup is just the start.

## Shooting World C'ships: Esha clinches bronze in women's 25m pistol

**CAIRO:** Indian shooter Esha Singh clinched her maiden individual World Championship medal -- a bronze in the women's 25m pistol -- but Paris Olympics double medallist Manu Bhaker yet again missed out on a podium finish, here Friday. The Indian shot a score of 30 in the final, to finish behind in-form Chinese Yao Qianxun (silver, score: 38) and Korea's reigning Olympic Champion Yang Jjin (gold, score: 40).

Esha's effort came as India wrapped up engagements in the 10-Olympic events on schedule at the ongoing tournament with a historic haul of one gold, three silver and as many bronze medals.

Overall, India lie third on the table with three gold, five silver and four bronze medals, behind leaders China with 10 golds and Korea, who are second with six gold medals. Beginning the day in fourth and seventh spots respectively, Esha and double Olympic medallist Manu Bhaker, shot confident rapid-fire rounds to sail into the top eight with scores of 587 and 586 respectively.

## India men's hockey team to work with Dr. Calder to improve hand-eye co-ordination

**NEW DELHI:** In a bid to improve players' hand-eye co-ordination, Hockey India has roped in renowned South African eye specialist Dr. Sherylle Calder to work with the men's hockey team till next year's Asian Games, chief coach Craig Fulton told PTI on Friday.

Calder, who specialises in hand-eye, foot and body co-ordination, is the go-to woman for some of the top athletes of the world.

Her EyeGym programmes have helped improve the performance of elite athletes such as golfer Ernie Els and Mercedes F1 driver Valtteri Bottas.

Born in Cape Town and raised in Bloemfontein, she has also worked with the South African rugby and

cricket teams.

"We will have a strikers camp, goalkeepers camp and hand-eye-specialist Dr. Calder will be working with us in December in Cape Town," Fulton told PTI in an exclusive interview.

"She is specialised person in improving hand-eye co-ordination. Before any decisions are made you need to be able to see the ball, see what's in front of you and it's the ability to train that and react faster.

"Hand-eye co-ordination is everything to do with goalkeepers, with hockey players. Like being a cricketer watching the ball out of the hands, you have a split second to make a decision, so we we are working on that in the build up to the World

Cup and the Asian Games.

"She will work remote mostly, sometime online and sometime on the field. Starting December she is going to work with us till World Cup and Asian Games.

It's a online skill session which the players have to complete and when needed she will join the team," he added.

Fulton, also a South African under whom India won a second consecutive bronze medal at the Paris Olympics, has now trained his eyes on a podium finish in next year's World Cup to be jointly hosted by Belgium and the Netherlands.

"The ideal goal is to win the World Cup, every tournament we go to, we want to win. Realistically we need

to see where we are ranked in the world, right now we are seventh in the world, so we also have to make some improvements in the next 6 months to be competitive on the world stage," he said.

"But at the same time we want to win every tournament we play in. Yes we will love to win the World Cup and are preparing for it but realistically where we are now we have some work to do and we know that.

"If we want to win the World cup, we need to beat six teams above us and all those that follows us.

I am being pretty pragmatic about it. I am pretty confident that we can put in a very good preparation block and be ready for the World Cup.

## Ankita Bhakat stuns Olympic silver-medallist Nam to clinch Asian gold

**DHAKA:** Indian archer Ankita Bhakat capped a sensational day with the biggest win of her career, stunning Paris Olympics silver-medallist Nam Suhyeon of South Korea 7-3 in a tense five-set final to claim the women's recurve gold at the Asian Archery Championships, here on Friday. India also secured the women's recurve bronze after Sangeeta edged out veteran five-time Olympian Deepika Kumari 6-5 in a dramatic shoot-off.

Ankita had earlier knocked out her longtime senior teammate, former world No. 1 Deepika Kumari, in the semifinals. Locked at 5-5, both archers shot a nine in the shoot-off, but Ankita's arrow was closer to the centre, sending her into the title clash.

Ankita began the final in commanding fashion, firing two 10s to take the opening set 29-27.

The second set ended in a scrappy 27-27 draw as both archers faltered. Ankita slipped to an 8 while Nam dropped to a 7.

## No discussion at all: SA not complaining about 'bauna' remark at Temba Bavuma



**KOLKATA:** South Africa batting coach Ashwell Prince on Friday played down the stump-mic chatter involving Indian pacer Jasprit Bumrah and wicketkeeper Rishabh Pant, saying the visitors will have "no discussion" around the incident during the opening day's play in the first Test at the Eden Gardens.

The exchange happened on the last ball of the 13th over in South Africa's innings when at 62/2, a leg-before appeal from Bumrah against Proteas captain Temba Bavuma was turned down.

During the conversation about whether to take the DRS, the stump mic picked up Bumrah saying, "bauna bhi hai," a remark many interpreted as a taunt at Bavuma's height.

Prince, however, distanced the team from any such controversy during the interaction after the opening day's proceedings. "No, there will be no discussion. It's the first time, obviously, it's come to my attention. I don't think there'll be any issues with what's happened out in the middle," Prince said.

## Reliance to set up 1 gigawatt AI data centre in Andhra Pradesh

**R**eliance Industries plans to set up a 1-gigawatt AI data center in India's Andhra Pradesh, the state's chief minister said on Friday, adding to infrastructure capacity in India where the likes of Google and Microsoft have made huge AI investments.

Chief Minister Chandrababu Naidu did not disclose financial details of the investment. Reliance did not immediately respond to a request for comment.

Globally, companies are investing heavily to build new infrastructure to meet booming demand for AI services.

India is a critical growth market where nearly a billion users access the internet. Google last month committed to a \$15 billion investment over five years to create an AI data center in Andhra Pradesh, its biggest ever investment in In-



dia. Microsoft and Amazon have also poured billions into building data centers in India.

Reliance's planned data center will operate as a twin to its gigawatt-scale AI data center in Jamnagar city in Gujarat state, "together forming one of Asia's strongest AI infrastructure networks," Naidu said. AI requires enormous computing power, pushing demand for specialised data centers that enable tech companies to link thousands of chips together in clusters.

The Reliance group, led by Indian billionaire Mukesh Ambani, includes Jio, India's leading telecom carrier, Reliance Retail Ltd, Network18 Media & Investments Ltd and Jamnagar, India's largest oil complex.

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## After Decades, Scientists Have Finally Discovered Tylenol's Secret Mechanism

**R**esearchers at the Hebrew University of Jerusalem have found that acetaminophen doesn't only act in the brain. Their study reveals that it also blocks pain at its origin by targeting nerve endings in the body. The team discovered that its active compound, AM404, interferes with sodium channels in pain-sensing neurons, stopping pain signals before they reach the brain.

This discovery transforms scientists' understanding of one of the world's most widely used painkillers. By showing that acetaminophen works both in the nervous system and at the site of pain, the findings could guide the creation of next-generation pain treatments designed to be more effective and gentler on the body.

Published in the Proceedings of the National Academy of Sciences, the study was conducted by Prof. Alexander Binshtok from the Faculty of Medicine and Center for Brain Sciences (ELSC) and Prof. Avi Pri-el from the School of Pharmacy at Hebrew University.

Together, their research uncovered a previously unknown mechanism of pain relief, challenging long-standing assumptions about how acetaminophen functions in the body.

Acetaminophen (also called paracetamol, Tylenol, or Panadol) is one of the

most commonly used pain and fever medications worldwide. It is known for effectively easing mild to moderate pain and reducing fever, without the stomach irritation or anti-inflammatory effects often linked to drugs like aspirin or ibuprofen.

For decades, scientists believed that acetaminophen relieved pain by working only in the brain and spinal cord. But this new research, published in PNAS, shows that the drug also works outside the brain, in the nerves that first detect pain.

Their discovery centers on a substance called AM404, which the body makes after taking acetaminophen. The team found that AM404 is produced right in the pain-sensing nerve endings--and that it works by shutting off specific channels (called sodium channels) that help transmit pain signals. By blocking these channels, AM404 stops the pain message before it even starts.

"This is the first time we've shown that AM404 works directly on the nerves outside the brain," said Prof. Binshtok. "It changes our entire understanding of how paracetamol fights pain."

This breakthrough could also lead to new types of painkillers. Because AM404 targets only the nerves that carry pain, it may avoid the numbness, muscle weakness, and side effects that come with traditional local anesthetics.



## Breakthrough Alzheimer's Drug Has a Hidden Problem

**R**esearchers at Osaka Metropolitan University in Japan, led by graduate student Tatsushi Oura and Dr. Hiroyuki Tatekawa, reported that lecanemab, a drug designed to clear amyloid plaques from the brain, does not improve the brain's waste removal system in the early stages after treatment. Their results indicate that the nerves of Alzheimer's disease (AD) patients have already sustained considerable damage, and that this waste-clearing function does not rebound quickly. The findings point to the need for treatments that target several biological problems at the same time.

The researchers' results add another piece to the long and complicated effort to understand how AD develops. Although it is the most widespread neurodegenerative disorder, it remains difficult to treat because many different factors contribute to its progression.

A major driver of nerve cell damage in AD is the accumulation of amyloid-β (Aβ) in the brain. In people without the disease, a network known as the glymphatic system circulates cerebrospinal fluid along the spaces surrounding arteries and into brain tissue. There, this fluid mixes with interstitial fluid to help remove metabolic waste products, including Aβ. The name "glymphatic system" comes from the involvement of glial cells in this process.

In AD, however, Aβ builds up and causes arteries to stiffen. This reduces the movement of fluid between the brain and the cerebrospinal fluid, which disrupts waste removal and leads to a series of harmful changes that produce AD symptoms.

Lecanemab, which was recently approved as a therapeutic option, is intended to lower Aβ levels. To study its effects, the Osaka Metropolitan University team examined the glymphatic system in patients both before and after lecanemab treatment, using the DTI-ALPS index to measure changes.

## Scientists Develop More Efficient Way To Extract Rare Earth Elements Amid Global Trade Tensions

**A** team of scientists at The University of Texas at Austin has created a cleaner and more efficient way to extract rare earth elements, which are vital for technologies such as electric vehicle batteries and smartphones. The technique could strengthen domestic production and lessen dependence on expensive imports.

The new process makes it possible to separate and collect rare earth elements from sources that were previously too difficult or inefficient to use, offering a potential solution to supply challenges heightened by global trade tensions.

"Rare earth elements are the backbone of advanced technologies, but their extraction and purification are energy intensive and extremely difficult to implement at the scales required," said Manish Kumar, professor in the Cockrell School of Engineering's Fariborz Maseeh Department of Civil, Architectural and Environmental Engineering

and the McKetta Department of Chemical Engineering. "Our work aims to change that, inspired by the natural world."

The study, recently published in ACS Nano, describes how the team engineered artificial membrane channels, tiny pores within membranes, that imitate the highly selective transport systems of natural proteins in living organisms. In biology, such channels guide ions as they move between cells.

Each channel has unique properties that allow only ions with specific traits to pass through while blocking others. This fine-tuned selectivity is essential for many biological functions, including the way the human brain processes information.

The researchers' artificial channels use a modified version of a structure called pillararene to enhance their ability to bind and block specific common ions while transporting specific rare earth ions. The result is a system that can selectively trans-

port middle rare earth elements, such as europium (Eu<sup>3+</sup>) and terbium (Tb<sup>3+</sup>), while excluding other ions like potassium, sodium, and calcium.

"Nature has perfected the art of selective transport through biological membranes," said Venkat Ganesan, professor in the McKetta Department of Chemical Engineering and one of the research leaders. "These artificial channels are like tiny gatekeepers, allowing only the desired ions to pass through."

Rare earth elements are split into several classes (light, middle and heavy), each with different properties that make them ideal for specific applications. Middle elements are used in lighting and displays, including TVs, and as magnets in green energy technologies, such as wind turbines and electric vehicle batteries.

The U.S. Department of Energy and the European Commission have identified several middle elements, including europium and terbium, as critical

materials at risk of supply disruption. With demand for these elements expected to grow by over 2,600% by 2035, finding sustainable ways to extract and recycle them is more urgent than ever.

In experiments, the artificial channels showed a 40-fold preference for europium over lanthanum (a light rare earth element) and a 30-fold preference for europium over ytterbium (a heavy rare earth element). These selectivity levels are significantly higher than those achieved by traditional solvent-based methods that require dozens of stages to achieve similar results.

Using advanced computer simulations, they discovered that the channels' selectivity is driven by unique water-mediated interactions between the rare earth ions and the channel. These interactions allow the channels to differentiate between ions based on their hydration dynamics--how water molecules surround and interact with ions.

## As AI data scrapers sap websites' revenues, some fight back

**A** swarm of AI "crawlers" is running rampant on the internet, scouring billions of websites for data to feed algorithms at leading tech companies -- all without permission or payment, upending the online economy.

Before the rise of AI chatbots, websites allowed search engines to access their content in return for increased visibility, a system that rewarded them with traffic and advertising revenues.

But the rapid development of generative AI has allowed tech giants like Google and OpenAI to harvest information for their chatbots with web crawlers, without humans ever needing to visit the original sites.

Traditional content producers, such as media outlets, are being outpaced by AI crawlers, which have cut into their online operations and advertising revenues.

"Sites that gave bots access to their content used to get readers in exchange," said Kurt Muehlmeier, head of AI strategy at data management firm Dataiku.

But the arrival of generative AI "completely breaks" that model, he told AFP. Wikipedia's human internet traffic fell by eight percent between 2024 and 2025 because of a rise in AI search engine summaries, the online encyclopedia reported last month.

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