DID YOU KNOW YOUR BRAIN HAS ITS OWN INTERNAL CLOCK CALLED THE 'CIRCADIAN RHYTHM'?

I help control your 24-hour sleep cycle.

I'm mainly regulated by the daily cycle of sunlight and darkness.

This helps you wake and fall asleep at the right time of day.

I impact the timing of your bodily processes, so I affect your football performance!

But when it's morning in the UK, it's night time in Australia and New Zealand where the World Cup is happening... how will that affect me?
TRAVEL AND JET LAG

When we travel to a different time zone, our natural 24-hour circadian rhythm no longer matches up with the time of day. The effect this has on your brain and body is called 'jet lag'.

Some players, such as Australia's Sam Kerr, are used to jet lag because they frequently travel between their national country and club country.

Chelsea fans even made a chant about it - scan this QR code to listen!

THE WORLD CUP KICKS OFF AT 7PM LOCAL TIME IN NEW ZEALAND, BUT WHAT TIME WILL THAT BE FOR FANS AROUND THE WORLD? WORK IT OUT AND WRITE IT IN THE FLAG. (HINT: THE INFORMATION IN BRACKETS TELLS YOU THE TIME DIFFERENCE).

DID YOU KNOW?

Los Angeles, USA (-19hrs)
Kingston, Jamaica (-17hrs)
London, England (-11hrs)
Rio de Janeiro, Brazil (-15hrs)
Lagos, Nigeria (-11hrs)
Jo'Burg, South Africa (-10hrs)
Beijing, China PR (-4hrs)
Sydney, Australia (-2hrs)
Auckland, New Zealand (0hrs)

JET LAG AND FOOTBALL PERFORMANCE

Footballers will experience jet lag after travelling to the World Cup, and unless they are afforded sufficient time to adjust, their performance will be suboptimal. Can you match the symptoms of jet lag to their impact on football performance?

1. Feeling Exhaustion
2. High Stress Levels
3. Emotionally Reactive
4. Poor Decision Making
5. Impaired Memory Recall

Answers: 1+C, 2+E, 3+D, 4+B, 5+A.

The dos and don'ts of tackling jet lag

DO EXPOSE YOURSELF TO MORNING LIGHT IF YOU TRAVEL EAST, AND EVENING LIGHT IF YOU TRAVEL WEST
DO EAT HEALTHY MEALS AT THE RIGHT TIME OF DAY FOR YOUR NEW TIME ZONE
DO ALLOW TIME TO ACCLIMATISE AT YOUR DESTINATION - 1 DAY FOR EVERY TIME ZONE YOU CROSS IS BEST

DON'T USE YOUR PHONE AT NIGHT, IT COULD MAKE IT HARDER TO FALL ASLEEP
DON'T OVERLOAD ON CAFFEINE, IT MIGHT MAKE JET LAG WORSE
DON'T NAP FOR LONGER THAN 20 MINS DURING THE DAY
WHAT MAKES YOU TICK?

Your circadian rhythm is a 24-hour body clock, orchestrated by the brain. It controls all your bodily processes!

Use the diagram to learn more about the effects of the circadian rhythm, and what that means for your football performance across the day.

Melatonin is a hormone that is released to promote sleep, so is high in the evening and low in the morning.

Adenosine, a ‘tiredness chemical’, starts low in the morning and rises during the day as we get more tired.

WHAT MAKES YOU TICK?

Use the diagram to learn more about the effects of the circadian rhythm, and what that means for your football performance across the day.

Melatonin is a hormone that is released to promote sleep, so is high in the evening and low in the morning.

Adenosine, a ‘tiredness chemical’, starts low in the morning and rises during the day as we get more tired.

WHAT MAKES YOU TICK?

Your circadian rhythm is a 24-hour body clock, orchestrated by the brain. It controls all your bodily processes!

Use the diagram to learn more about the effects of the circadian rhythm, and what that means for your football performance across the day.

Melatonin is a hormone that is released to promote sleep, so is high in the evening and low in the morning.

Adenosine, a ‘tiredness chemical’, starts low in the morning and rises during the day as we get more tired.
WHY DOES SLEEP MATTER?

You might not be aware of it, but lots of things are happening in your body when you sleep. Without sleep, the brain cannot function properly!

WHAT ABOUT CAFFEINE?

Caffeine is a natural stimulant found in some drinks, food and medicines. It can make you feel more awake and alert by blocking adenosine, the tiredness molecule that promotes sleep and relaxation.

Some footballers have energy drinks before or during a match to boost their performance. But it can also have negative effects...

HOW MUCH CAFFEINE DO YOU CONSUME?

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CAFFEINE mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cup of tea</td>
<td>50</td>
</tr>
<tr>
<td>Mug of filter coffee</td>
<td>140</td>
</tr>
<tr>
<td>An espresso</td>
<td>80</td>
</tr>
<tr>
<td>Can of Coke</td>
<td>30</td>
</tr>
<tr>
<td>Can of Red Bull</td>
<td>80</td>
</tr>
<tr>
<td>Bottle of Lucozade</td>
<td>46</td>
</tr>
<tr>
<td>Bar of dark chocolate</td>
<td>50</td>
</tr>
<tr>
<td>Mars bar</td>
<td>10</td>
</tr>
</tbody>
</table>

Use the table to help you calculate your average daily intake.

Most days I consume: mg

SUGGESTED DAILY CAFFEINE LIMITS:
- ADULTS: 400mg
- PREGNANT WOMEN: 200mg
- ADOLESCENTS: 100mg

HOW WELL DO YOU SLEEP? DO YOU FEEL RESTED IN THE MORNING?

EARLY BIRD CATCHES THE... GAME?

Everyone has a circadian rhythm regulated by light, but we all express our rhythm differently and show individual preferences for waking up and falling asleep at different times.

This individual preference is called your “chronotype”, and it might impact the time of day you feel most active!

MATCH DAY TOMORROW GOTTA GET SOME ZZZZZZZZS!

Spot the differences in Grace's bedroom and find out how you can improve your sleep environment.
WHO’S ON YOUR CHRONO-TEAM? TAKE THE QUIZ BELOW TO FIND OUT!

WHEN DO YOU PREFER TO WAKE UP?

6am-8am
- DOES MORNING FOOTBALL PRACTICE SOUND FUN?
  - Can’t wait
  - I get tired after dinner and am early to bed
  - I’m wide awake
  - That’s me

9am-11am
- IT’S EASY TO GET UP ONCE I’M AWAKE
  - Not too early
  - I snooze my alarm

I GET TIRED AFTER DINNER AND AM EARLY TO BED

CAN’T WAIT

I SNOOZE MY ALARM

I'M ALERT AND READY TO PLAY FOOTBALL WHEN I WAKE UP

I'M NOT SURE

I'M A BIT SLEEPY

READY TO GO!

AFTERNOON IS BEST FOR WORK AND BEING CREATIVE

SOMETIMES EVEN EARLIER

THE LATER THE BETTER

IF I STAY UP LATE WATCHING THE WORLD CUP, I’LL STILL WAKE UP EARLY

I'M SLEEPING IN

IF IT WAS UP TO ME I'LL STAY UP UNTIL MIDNIGHT

I'M NOT SURE

I NEED A MIDDAY POWER NAP IF I HAVE FOOTBALL IN THE EVENING

ABSOLUTELY

YES PLEASE!

NO, I LOVE EVENING FOOTBALL

EARLY BIRD!
YOU’RE TEAM ALEX

You prefer to get up early and get on with that day. Football in the early morning sun is best for you. You are at your most productive in the first half of the day.

MANCHESTER CITY & ENGLAND DEFENDER ALEX GREENWOOD

NIGHT OWL!
YOU’RE TEAM EMILY

You prefer to sleep in later than most, and love playing football under the floodlights! You are most productive and creative later in the afternoon or in the evening.

USWNT AND NORTH CAROLINA COURAGE DEFENDER EMILY FOX

Compiled by Lauren Rudd, Louise Aukland, and the FOTB team.

Football on the Brain is a four-year public engagement project involving researchers and football communities understanding more about how our brains are involved in football. Follow along on Twitter: @FootballOnBrain #FootballOnTheBrain