

# FOOTBALL

## ON THE BRAIN

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

**I HELP CONTROL YOUR 24-HOUR SLEEP CYCLE.**

**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!**

**I'M MAINLY REGULATED BY THE DAILY CYCLE OF SUNLIGHT AND DARKNESS.**

**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?**



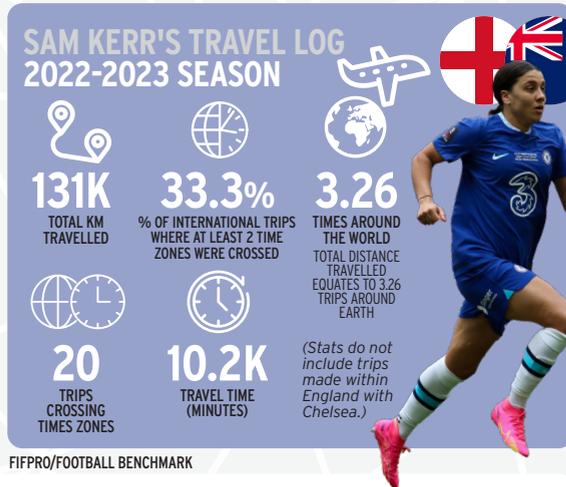
# TRAVEL AND JET LAG

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?

It is easier for your circadian clock to adjust if you travel in a westward direction, because you gain extra hours of daylight. Losing daylight by travelling eastwards is much harder to overcome.

## 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	A. FORGETTING THE COACH'S GAME PLAN
2. HIGH STRESS LEVELS	B. BAD PASSES AND LOST OPPORTUNITIES!
3. EMOTIONALLY REACTIVE	C. REDUCED GAME STAMINA
4. POOR DECISION MAKING	D. QUICKLY LOSE YOUR TEMPER... YELLOW CARD!
5. IMPAIRED MEMORY RECALL	E. CAN'T COPE WITH PRESSURE, STRUGGLING TO SLEEP

## DID YOU KNOW?

You don't just get jet lag from travelling across time zones! Having different sleep patterns between the week and the weekend might give you 'social jet lag'!



## THE DOS AND DON'TS OF TACKLING JET LAG

DOS	DON'TS
<ul style="list-style-type: none"> <li>DO EXPOSE YOURSELF TO MORNING LIGHT IF YOU TRAVEL EAST, AND EVENING LIGHT IF YOU TRAVEL WEST</li> <li>DO EAT HEALTHY MEALS AT THE RIGHT TIME OF DAY FOR YOUR NEW TIME ZONE</li> <li>DO ALLOW TIME TO ACCLIMATISE AT YOUR DESTINATION - 1 DAY FOR EVERY TIME ZONE YOU CROSS IS BEST</li> </ul>	<ul style="list-style-type: none"> <li>DON'T USE YOUR PHONE AT NIGHT. IT COULD MAKE IT HARDER TO FALL ASLEEP</li> <li>DON'T OVERLOAD ON CAFFEINE. IT MIGHT MAKE JET LAG WORSE</li> <li>DON'T NAP FOR LONGER THAN 20 MINS DURING THE DAY</li> </ul>

**GET READY!**  
The World Cup opens on 20th July in New Zealand!  
Fill in your boarding pass. Research says allow 1 day for every time zone you cross to acclimatise\*.  
\*Shorter periods will affect players more than fans.

FOTB AIRLINES	BOARDING PASS	FOTB AIRLINES
PASSENGER TICKET AND BAGGAGE CHECK	FIRST CLASS	FIRST CLASS
Name of Passenger: _____	Passenger: _____	Passenger: _____
From: _____	From: _____	From: _____
Flight: SK80	Departure Date: _____	Departure Date: _____
Time: 11.40	To: AUCKLAND/AKL	To: AUCKLAND/AKL
Gate: 03	Boarding: 11:00	Gate: 03
Seat: 1A	Terminal: 1	Boarding: 11:00
FILL IN THE TICKET WITH YOUR ESTIMATED DEPARTURE DATE		
20623-20823		

# 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.



SCAN THE QR CODE AND WATCH THE VIDEO TO FIND OUT MORE.



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

**CHEMICAL CHANGES:  
ADENOSINE LEVELS NOW HIGH;  
MELATONIN RELEASE STARTS TO RISE**

**18:00**

**HIGHEST BODY TEMPERATURE**

**GREATEST CARDIOVASCULAR EFFICIENCY & MUSCLE STRENGTH**

**BEST COORDINATION**

**FOOTBALL PERFORMANCE IS OPTIMAL LATER IN THE DAY**



**MIDNIGHT**



**SLEEP IS IMPORTANT FOR RECOVERY**

**LOWEST BODY TEMPERATURE**

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

**06:00**

**CHEMICAL CHANGES:  
MELATONIN RELEASE SLOWS AND ADENOSINE LEVELS ARE LOW**



**NOON**

**HIGHEST ALERTNESS & THINKING SKILLS**



THIS IS A TYPICAL EXAMPLE FOR SOMEONE WHO WAKES UP AROUND 7AM AND GOES TO BED AROUND 10PM



# 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!

**THE BENEFITS OF SLEEP**

- HEALTHY IMMUNE SYSTEM
- MUSCLE RECOVERY & GROWTH
- MEMORY CONSOLIDATION
- BETTER MOOD REGULATION
- INCREASED MENTAL ALERTNESS
- REDUCED RISK OF INJURY
- IMPROVED SPEED & COORDINATION

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

# WHAT ABOUT CAFFEINE?

**CAFFEINE ADVICE:** Monitor your intake by checking your food and drink. Avoid caffeine within 6 hours before bed.

**PROS**

- QUICKER REACTION TIMES
- LESS AWARE OF FATIGUE
- INCREASED ENDURANCE

**CONS**

- INCREASED BLOOD PRESSURE
- FEELINGS OF ANXIETY
- DIFFICULTY SLEEPING

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...

ITEM	CAFFEINE mg
Cup of tea	50
Mug of filter coffee	140
An espresso	80
Can of Coke	30
Can of Red Bull	80
Bottle of Lucozade	46
Bar of dark chocolate	50
Mars bar	10

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

**WARNING!!!**  
You can build up a caffeine "tolerance", meaning you will feel the effects of the same amount of caffeine less over time. It is also mildly addictive, so be careful to regulate the amount you have...



# MATCH DAY TOMORROW GOTTA GET SOME ZZZZZZZZZS!

Spot the differences in Grace's bedroom and find out how you can improve your sleep environment.

REMEMBER! KEEPING A CLEAN AND HEALTHY BEDROOM ENVIRONMENT IS ONE IMPORTANT WAY YOU CAN IMPROVE YOUR QUALITY OF SLEEP!



# EARLY BIRD CATCHES THE... GAME?

YOU MEAN, THERE'S A REASON I HATE EARLY MORNING FOOTBALL PRACTICE?

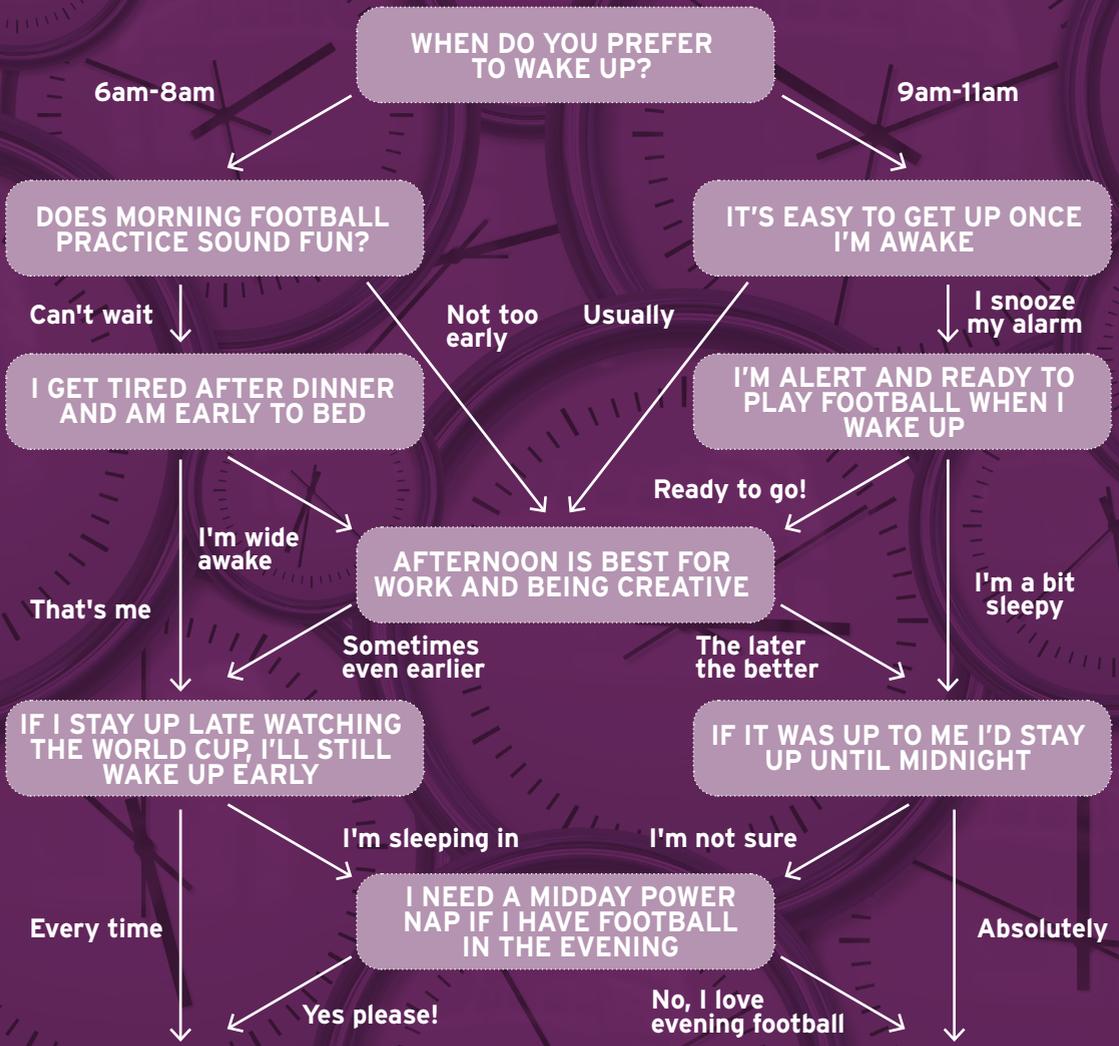
Everyone has a circadian rhythm regulated by light, but we all express our rhythm differently and show individual preferences for waking up and falling asleep at different times.

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



TURN OVER TO TAKE A QUIZ AND FIND OUT WHICH FOOTBALLER YOU SHARE A CHRONOTYPE WITH!

# WHO'S ON YOUR CHRONO-TEAM? TAKE THE QUIZ BELOW TO FIND OUT!



**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

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

