A SMALL BOOK ABOUT SLEEP AND PROTEIN



Built **overnight.**

Training places the order. The night delivers it. One day, told by the clock, for athletes in team sport.

Magnus Ågren · People. Purpose. Performance.

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PROLOGUE

Two players, **one programme.**

Two players complete the same programme. Same lifts, same ice or field time, same coach. After eight weeks one is stronger and fresher. The other is flat. The difference is rarely on the training sheet.

A session does not make you better. It creates a demand. Your body answers that demand in the hours that follow, by building new protein into muscle, tendon and connective tissue.

Two things decide how well the answer is delivered: the material available, and the conditions for the work. Protein is the material. Sleep is the conditions. Each has its own research, and the two meet in the hours between the last meal and the alarm.

The session places the order. **The night delivers it.**

This small book is about the delivery.

One day, **by the clock.**

Sleep and protein both work by the hour, so this book does too. It follows one day from the alarm to the middle of the night. Each chapter is one hour and ends with one thing to do.

07:00	**The alarm** · *the night starts here*	4
08:00	**Breakfast** · *feeding one of four*	5
12:00	**Lunch** · *the three-hour clock*	6
13:30	**The nap** · *a short one*	7
15:00	**The last coffee** · *what you do not notice*	8
19:00	**Dinner, or the game** · *the evening decides the night*	9
22:00	**The last hour** · *lights low, last feeding*	10
23:00	**Lights out** · *nothing happens here*	11
03:00	**The night shift** · *the work nobody watches*	12
+	**Your numbers, food table, two day plans**	15
14	**The 14-night scorecard**	18

Small numbers point to the sources at the back. Where the evidence is thin, or comes from people who are not athletes, the text says so.



07:00

The alarm

The night starts here

The alarm goes at seven on a Sunday, exactly as it did on Tuesday. This is the least popular page in the book and the one that does the most work.

Sleep is set up from the moment you wake. A fixed wake time is the strongest lever you have on the body clock, and it is the one you control. Daylight in the first hour sets the timer that decides when sleepiness arrives tonight.

You probably sleep less than you think

The 2021 expert consensus in the British Journal of Sports Medicine describes elite athletes as prone to short sleep, under seven hours a night, and to broken sleep. Training times, travel, competition and stress are the usual reasons. It prefers a personal target to a single figure such as seven to nine hours.[1] Find the amount after which you wake without an alarm and train well. Then protect it.

1.7 times

Among 112 adolescent athletes, those averaging under eight hours were 1.7 times more likely to have been injured. An association from self-reported sleep, not proof of cause.[3]

DO THIS

Wake within 30 minutes of the same time, seven days a week. Ten minutes outdoors within the first hour.



08:00

Breakfast

Feeding one of four

Toast and coffee is not breakfast. It is the first of four feedings, missed.

Protein advice tends to arrive as rules about powders and timing. The trials point to a simpler order, and the daily total comes first.

Across 49 trials and 1,863 participants, extra protein improved the strength and fat-free mass gained from resistance training. The benefit levelled off near 1.6 g per kg of body weight per day, with an upper confidence limit of 2.2.[9] The International Society of Sports Nutrition gives 1.4 to 2.0 g/kg for most people who train.[10]

1.9 g/kg — The middle of the working range, 1.6 to 2.2 g per kg per day. This book aims there.

Then comes the size of each feeding. Four meals at 0.4 g/kg reach 1.6 g/kg a day, and four at 0.55 reach 2.2.[11] The 1.9 target is four feedings of about 0.48 g/kg, which for most athletes is 30 to 50 g each.

DO THIS

Find your row on page 15. Eat the first quarter of it before you leave the house.



12:00

Lunch

The three-hour clock

By noon the breakfast protein has done its work, and the muscle is ready to listen again.

After a protein feeding, muscle protein synthesis peaks within about 90 minutes and is back at baseline within two to three hours, while amino acids are still high in the blood. Researchers call this the muscle-full effect.[16] A second dose taken too soon meets muscle that is not yet ready to respond.

Over 12 hours of recovery in 24 trained men, 20 g every three hours beat both 10 g every 90 minutes and 40 g every six hours.[12] In eight adults, three even meals of about 30 g gave 25% higher 24-hour synthesis than the same protein loaded into dinner.[17]

A big meal is not wasted

A 100 g dose after exercise produced a larger and longer response, beyond 12 hours, than 25 g.[13] A big dinner counts in full. Frequent small doses are the weakest pattern.

> **The limit of this evidence.** These are short-term measurements. In a 16-week study of 41 overweight adults combining resistance training with weight loss, spreading protein evenly did not change body composition.[18]

DO THIS

Three to four hours between feedings. Missed one? Make it up at the next meal.



13:30

The nap

A short one

The afternoon dip is not weakness. It is built into the body clock, and an athlete can use it.

Studies in athletes support naps of 20 to 90 minutes between 13:00 and 16:00.[6] After a short night, use it.

More sleep shows up in performance

Eleven college basketball players extended their time in bed for five to seven weeks. A timed sprint fell from 16.2 to 15.5 seconds and shooting accuracy rose by 9%. A small study with no control group, but the direction has been consistent since.[2]

+111 min more sleep per night, on average, in those eleven players.[2]

DO THIS

Twenty to thirty minutes, finished by 15:00, so that tonight is not delayed.



15:00

The last coffee

What you do not notice

The last coffee of the day feels like it costs nothing. You fall asleep fine. You wake up at seven. The bill arrives where you cannot see it.

A 400 mg dose taken six hours before bed still cut measured sleep by more than an hour. The participants did not notice the loss.[4]

> 1 h of sleep lost to caffeine taken six hours before bed, unnoticed by the sleeper.[4]

Count everything: coffee, energy drinks, pre-workout products. Pre-game caffeine has a sleep cost too. Where you use it, the lowest dose that works keeps that cost down.

DO THIS

Last caffeine eight hours or more before bed. For a 23:00 bedtime, that is 15:00.



19:00

Dinner, or the game

The evening decides the night

On a training day this is dinner: feeding three, and the last large meal. A heavy meal close to bed keeps digestion working, so it sits three hours out.

On a game day this is the start, and the night that follows is the hardest one of the week to get right.

Late games cost sleep

Sixteen elite footballers reported about two and a half hours less sleep after night matches than after day matches, three hours less than on training days, and rated that sleep as less restful.[7]

After a late game

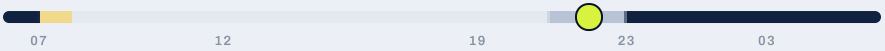
Arousal is high and sleep will come late. Eat, with 40 g of protein or more. Shower. Keep the lights low and go to bed when sleepy, not by the clock. Next morning, wake no more than 60 to 90 minutes later than usual and nap after lunch.

And the drink afterwards

Sleep arrives faster after alcohol and is more disrupted in the second half of the night. At moderate and high doses, REM sleep across the night is reduced.[5]

DO THIS

Last large meal three hours before bed. After a game, bed when sleepy.



22:00

The last hour

Lights low, last feeding

Screens off, lights low. One or two quiet activities, the same ones every night. The repetition is the signal.

The pre-sleep dose

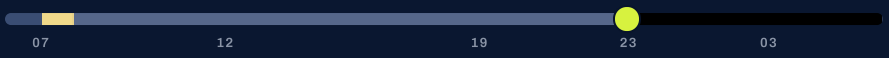
The longest gap between feedings in any day is the night. So the fourth feeding goes here.

Amount	Your per-feeding figure from page 15, and never less than 30 g.[10]
When	30 to 60 minutes before bed, on training and game days.
What	Slow-digesting dairy: quark, skyr, cottage cheese, Greek yoghurt or a casein shake. Small in volume, low in fat and sugar.

> **Does it help you sleep?** Dairy protein supplies tryptophan, which the body turns into serotonin and melatonin. Athlete trials of α-lactalbumin, the tryptophan-rich whey fraction, are split: better sleep after an evening game in one,[19] no benefit over seven nights in another.[20] Tyrosine does the opposite. It feeds dopamine and noradrenaline, the alertness chemistry.

DO THIS

Phone on the charger outside the bedroom. Bowl of quark in your hand.



23:00

Lights out

Nothing happens here

Cool. Dark. Quiet. Blackout curtains or an eye mask, earplugs if you need them, the phone somewhere else.

Time in bed equals your sleep need plus 30 minutes.

Nothing on this page is exciting.
That is the point of it.

> **When to see a doctor.** Loud snoring, breathing pauses noticed by a partner, or waking unrefreshed after a full night are reasons for a sleep apnoea assessment. Habits do not fix a breathing problem.

DO THIS

Set the room once. Then leave it alone.



03:00

The night shift

The work nobody watches

Three in the morning. The house is quiet and you have no idea that any of this is going on.

Sixteen young men trained in the evening and received either 40 g of casein or a placebo 30 minutes before sleep. The protein was absorbed through the night, whole-body protein balance turned positive, and muscle protein synthesis was about 22% higher, at the edge of statistical significance.[14]

22% higher overnight muscle protein synthesis after 40 g of casein before bed.[14]

Over 12 weeks of training, a nightly pre-sleep protein drink produced larger gains in muscle size and strength than a placebo, although that group also ate more protein in total.[15]

That is the delivery. The order was placed in the gym, the material arrived at 22:30, and the work is being done now, in the dark, by a body that was given the conditions for it.



And when the night is taken away

One night without sleep lowered muscle protein synthesis by 18% the following day in 13 healthy adults, with cortisol up 21% and testosterone down 24%.[8]

18% lower muscle protein synthesis the day after one night without sleep.[8]

That was total sleep loss, the extreme case. The reading for a season is plain enough: protein eaten on poor sleep is used less well.

Nobody watches this shift.
It is the one that builds you.

Four hours from now the alarm goes. Same time as yesterday.

What the research **cannot say yet.**

A full night without sleep reduces performance. The effect of one to three shortened nights, the common case in a season, is less clear. Sleep need also differs between people, which is why the consensus prefers a personal target.[1]

The protein timing studies measure hours, not seasons. The daily total is the firm ground. The spacing is a sensible refinement on top of it.

When to aim higher

The upper end of the range suits heavy training blocks, return from injury, older athletes and mostly plant-based diets. Above it, 2.3 to 3.1 g/kg may help keep lean mass when calories are deliberately reduced.[10]

Food first, powder second

Whole foods can cover the full requirement. A supplement is a convenience for the feedings that food cannot reach.[10] Athletes under anti-doping rules should use only batch-tested products.

Plant-based, and tolerance

Combine plant sources across the day and aim for the upper half of the range. A source that causes bloating is the wrong one for you: lactose-free dairy, egg or plant proteins are direct replacements.

TOOL 1

Your **numbers.**

Two measurements are needed: body weight and body fat. Find your row, adjust for body fat, and write the numbers on the scorecard.

BODY WEIGHT	DAILY RANGE 1.6–2.2 G/KG	DAILY TARGET 1.9 G/KG	PER FEEDING TARGET ÷ 4
60 kg	96–132 g	**114 g**	29 g
70 kg	112–154 g	**133 g**	33 g
80 kg	128–176 g	**152 g**	38 g
90 kg	144–198 g	**171 g**	43 g
100 kg	160–220 g	**190 g**	48 g
110 kg	176–242 g	**209 g**	52 g

Four feedings means three meals and the pre-sleep dose, three to four hours apart. If you are far below target, add 20 to 30 g per day for a week or two before adding more.

Body weight and body fat

The research gives protein per kg of total body weight, mostly in lean people. Muscle sets the requirement, fat does not. The table fits athletes at roughly 10 to 18% body fat. Above that, calculate from fat-free mass:

Fat-free mass = body weight × (1 – body fat %)
Daily target = fat-free mass × **2.2 g**

Example: 100 kg at 25% body fat is 75 kg fat-free, so 165 g per day, not 190 g.

TOOL 2

What 30 g **looks like.**

FOOD	PROTEIN PER 100 G	FOR 30 G OF PROTEIN
Chicken breast, roasted	31 g	**100 g**
Lean beef mince, cooked	26 g	**120 g**
Salmon, farmed, cooked	22.1 g	**140 g**
Tuna, canned, drained	22 g	**140 g**
Quark or skyr, natural	11 g	**275 g**
Cottage cheese, low-fat	11.5 g	**265 g**
Greek yoghurt, non-fat	10.2 g	**295 g**
Firm tofu	14 g	**215 g**
Lentils, cooked	9 g	**335 g**
Eggs, large (50 g)	6.3 g each	**5 eggs**
Whey or casein powder	75–80 g	**40 g**

USDA FoodData Central and Nordic product labels; amounts rounded up to 5 g. Brands differ (tuna 19–25 g, tofu 8–17 g, strained yoghurt 9–16 g per 100 g), so check the label.

> **Scale it.** If your per-feeding number is 43 g, take the amount in the right-hand column and add roughly half again.

Two days **on one page.**

Training day

07:00	Wake. Daylight within the hour.	**Breakfast · feeding 1**
10:00	Training	
12:00		**Lunch · feeding 2**
15:00	Last caffeine	
19:00		**Dinner · feeding 3**
22:00	Screens off, lights low	**Pre-sleep dose · feeding 4**
23:00	Bed. Cool, dark, quiet.	

Game day, 19:00 start

08:00	Wake at the usual time. Daylight.	**Breakfast · feeding 1**
12:00		**Lunch · feeding 2**
13:30	Nap, 20–30 min	
15:30		**Pre-game meal · feeding 3**
19:00	Game	
22:00	Lights low from here	**Post-game meal, 40 g or more · feeding 4**
Sleepy	Bed when sleepy, not by the clock	
Next day	Wake within 90 min of usual. Short nap.	**Back to four feedings**

TOOL 4 · PRINT THIS PAGE AND KEEP IT BY THE BED

The 14-night **scorecard.**

BODY WEIGHT KG _____ BODY FAT % _____ FAT-FREE MASS KG _____ DAILY PROTEIN G _____

PER FEEDING G _____ WAKE TIME _____ BEDTIME _____ CAFFEINE CUT-OFF _____

STANDARD · TICK WHEN MET	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Wake time within 30 min of target														
2 Outdoor light within 60 min of waking														
3 Last caffeine 8 h or more before bed														
4 Screens off, lights low 60 min before bed														
5 Daily protein target reached														
6 Four feedings, pre-sleep dose included														
Hours slept														
Morning readiness, 1–5														
Standards met, 0–6														

Fourteen nights, six standards, one tick each. Change one thing at a time.

AFTER 14 NIGHTS

Reading **the result.**

70–84 ticks	The standards hold. Change nothing and keep the routine through the next block.
55–69	Find the row with the fewest ticks. Fix that row only, then run 14 more nights.
Under 55	Start with rows 1 and 5: wake time and daily protein. The rest follows from those two.

What to look for

Compare the readiness row with the standards row above it. Check whether the mornings you rated 4 or 5 sit under the nights where five or six standards were met.

A pattern in your own handwriting carries more weight than any instruction in this book.

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LIGHTS OUT

Sleep **well.**

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Performance and player health in elite team sport.

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For what happens between games, the companion book is **The Recovery Manual**, hockey edition, updated and expanded. Free at the same address.

This book is educational and does not replace individual medical or dietetic advice. Athletes under 18, and anyone with a medical condition including kidney disease, should speak to a qualified professional before changing protein intake. © 2026 Magnus Ågren.