

SELF IN MOTION

Coaching Matrix

Hand-balancing: from a solid two-arm handstand to the first one-arm straddle

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ELITE MOVEMENT, EXPLAINED BY SCIENCE.

SPORT	POPULATION	AGE	GOAL
Hand-balancing	Intermediate practitioners	15-40	Two-arm handstand → one-arm straddle

About this matrix

This coaching matrix is a tool for building training sessions. It is written for practitioners who can already hold a two-arm handstand but are not yet ready to start one-arm training.

The exercises strengthen the handstand and prepare the practitioner for the beginnings of one-arm work; those taking their first steps on one arm will also benefit greatly when a coach applies it. This level is the most common plateau and the hardest transition. Before the two-arm handstand is learned, and again once the one-arm handstand is, progress is visible and rewarding. The stretch in between, from two arms to one, is usually the longest and most gruelling phase of a hand balancer's journey. It is also where most people are, which is why I created this matrix: to guide my own coaching of exactly this group.

Introduction to hand-balancing

Hand-balancing is the act of keeping one's balance purely on the hands. It is mainly considered a circus art, often paired with contortion or other circus disciplines, and it is an integral part of sports such as acrobatics, gymnastics and calisthenics. It consists largely of closed skills: handstands and their variations, elbow levers, and other skills where one or two hands are the only contact with the floor. Equipment is common in performance and practice, including hand-balancing canes, blocks, resistance bands and light weights.

In this matrix the basic two-arm handstand is the foundation, and the one-arm straddle handstand is covered in detail in the specialisation chapter. Levers, any skill supported on the elbows, and contortion elements are not included.

I
Foundations

The two shapes everything in this matrix is built around



The two-arm handstand

The basic two-arm handstand

The two-arm handstand is the foundational skill of hand-balancing: every other skill stems from it and shares its guiding principles and physical requirements. Most drills in this matrix therefore apply to it directly; the one-arm straddle handstand later gets its own set.

CUES TO UPHOLD IN EVERY TWO-ARM DRILL

- Gaze between the hands.
- Shoulders elevated.
- Pelvis tilted posteriorly, with the abdominal wall, glutes and quadriceps engaged.
- Toes pointed (calves, the triceps surae).



The one-arm straddle handstand

The one-arm straddle handstand

The one-arm straddle is usually the first shape people hold on one hand. The centre of gravity is lower and the legs, the long levers, are closer to the centre of mass, so deviations are easier to correct than in a full one-arm handstand. It does demand comfortable control of the legs on two arms first; every drill needed to build it follows in this matrix.

CUES

- Hips maximally externally rotated.
- Gaze at the inside of the standing hand.
- Standing shoulder elevated; the floating shoulder stays elevated too, even off the floor.
- No lateral hip tilt at first.
- Both legs fully straight and engaged.

II

Elements of hand-balancing

On strength: a new view on balance

Strength is the most important aspect of hand-balancing. What people call "balance", the thing they feel they are missing, is in fact very specific strength, built through very specific drills.

The feeling of balance comes from coordinating many small movements in response to a deviation of the centre of gravity. If the body reacts fast enough, and the muscles are strong enough, they correct the deviation and balance is kept. Holding any skill is therefore mostly a question of strength combined with practice, and that is how it should be trained.

Strength for holding static shapes

In order from least to most important.

1 Wrist and finger flexion

Flexion and extension at the wrist are crucial, especially on two arms. Flexion is the main mechanism that saves the shape when falling over the fingers: the stronger it is, the more room there is to fall and still correct.

2 Shoulder elevation

The shoulders stay elevated in every handstand shape. They need not be maximally elevated, but depressed shoulders cost balance and, over time, put excessive load on the shoulder joint.

3 Shoulder extension

When wrist flexion is not enough to stop a fall over the fingers, shoulder extension takes over. It also drives the press, lifting into a handstand from the palms with the shoulders alone, a key skill on canes, where the feet cannot help with the entry.

4 The abdominal wall

The pelvis stays posteriorly tilted through most shapes, held by contracting the abdominal wall, often and for long periods. Precise control of the pelvis also needs a good mind-muscle connection, so targeted abdominal work pays off.

5 The glutes

With the pelvis tucked, the legs must not drift forward: contracting the glutes and fully extending the legs keeps the line. Some drills train this glute–abdominal synergy directly.

6 The legs

The quadriceps stay contracted to keep the legs straight, and the calves (triceps surae) point the toes. Weak legs make shapes hard to hold and disturb balance; strong legs hold their shape and make transitions between shapes seamless.

III

The drill matrix

From the simplest drills, through a stable two-arm handstand, to the one-arm straddle

Wrist and finger flexion



Wall finger push

Wall finger push

The single most effective exercise for wrist and finger flexion, and the best protection against falling over the fingers. Measure the distance from the wall to the middle finger in hand lengths, to track progress. Then walk the feet onto the wall, hold a perfect line, and push the fingers into the floor to move the legs away from the wall. Never kick off: act as if the wall were not there. This trains the fingers to push into the floor and right the handstand when it starts to fall.

DOSE Reps and sets

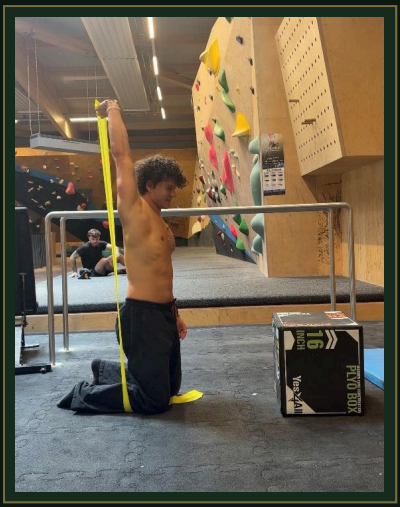


Stomach-to-wall hold

Stomach-to-wall hold

Staying on the wall in this position requires constant wrist flexion, with the fingers pressing into the floor: an isometric load on the forearm flexors. It also teaches hip position, because an anterior pelvic tilt pushes the hips off the wall and makes the hold impossible. Especially useful for anyone with bad hip habits.

DOSE Holds for time



Banded wrist flexions

Banded wrist flexions

Useful as prehabilitation, rehabilitation, warm-up and conditioning for the wrist. The arm is overhead, in the same elevated shoulder position as a handstand, which makes it sport-specific. It also works on rest days to promote blood flow and recovery. Fix a band under the leg, take it overhead, and flex and extend the fingers against it.

DOSE Light, for reps LEVEL Warm-up / rest days

Shoulder extension, elevation and pressing strength



Wall shoulder extensions

Wall shoulder extensions

From a handstand facing the wall, let the shoulders travel away from it, sliding the toes along the wall. Then push back by extending the shoulders, or, for more advanced hand balancers, lift off into a free handstand. This builds the strength to save a handstand that has fallen too far over the shoulders.

DOSE Reps



Back-to-wall shoulder elevations

Back-to-wall shoulder elevations

With the back as close to the wall as possible, to practise correct hip position, perform shoulder elevations for reps or hold the elevated position isometrically. A good supplementary exercise that improves shoulder stability in every other skill.

DOSE Reps or isometric holds

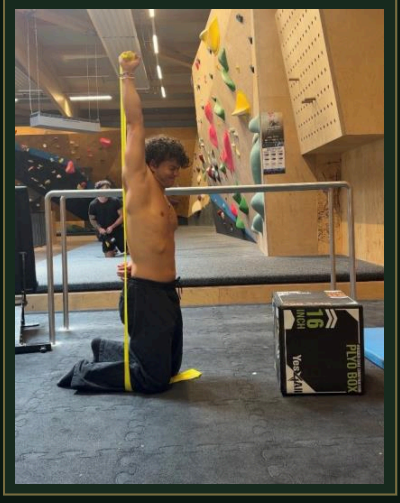


Piked shoulder elevations

Piked shoulder elevations

An easier version of the previous drill, good for building first shoulder-elevation strength in beginners. Perform controlled elevations in a pike, always aiming to push the head between the hands so that it does not drift too far forward.

DOSE Reps LEVEL Beginner



Banded shoulder elevations

Banded shoulder elevations

Like the banded wrist flexion, a good supplementary exercise for the warm-up, prehabilitation, activation or other supplementation. Secure the band under the legs, take the other end overhead and perform controlled shoulder elevations.

DOSE Controlled reps LEVEL Warm-up / supplement

Pressing strength

Pressing strength carries over to many skills beyond the press itself. It is only touched on briefly here, with the simplest exercises for learning the press.



Foot-supported press: start



Foot-supported press: pike

Foot-supported press

Practise the press with only as much help from the legs as needed. Keep the feet on the box and use shoulder extension to move into the pike; if the shoulders are not yet strong enough, the legs can assist. At the top of the pike the shoulders are fully elevated; at the bottom, protraction is held. Excellent for developing the press, and a good supplement to regular handstand training.

DOSE Reps



Negative box press

Negative box press

Start in a pike on the box and slowly lower the toes to the floor, legs apart or together. More advanced: only do it once it can be done with control. As an eccentric exercise, keep the reps low and use more sets at first.

DOSE Low reps, more sets

LEVEL Advanced



Handstand push-up

Handstand push-up

An important addition: it builds overall shoulder and triceps strength and greatly improves control in the handstand. It is an advanced exercise, best done apart from hand-balancing practice or alongside a lighter session. Keep reps low across many sets: it is as much a skill as a strength exercise, and this allows more practice without accumulating fatigue.

DOSE Low reps, many sets

LEVEL Advanced

IV

Specialisation: the one-arm straddle

The path from two arms to one, with prerequisites and drills

PREREQUISITES BEFORE STARTING ONE-ARM WORK

- A two-arm handstand with good form, held for **at least one minute**.
- Full control of every two-arm shape: straddle, tuck and single-leg isolations.



Single-leg isolation



Tuck



Straddle

Single-leg isolations

The first one-arm drill to perform. Each hand takes more weight than in any symmetrical drill, so the shoulders start getting used to bearing more load: the gradual way into one-arm hand-balancing.

DOSE Holds, both sides



Straddle lean

Straddle leans

Shift the opposite hip over the standing shoulder: not necessarily all the way, just as far as the shoulder can take at first. Move from one shoulder to the other, practising the transition. This loads the standing shoulder more and teaches keeping the hip and leg shape while moving towards the one-arm.

DOSE Shifts side to side



Piano-fingers lean

Piano-fingers lean

Tilt the opposite hip even further over the supporting shoulder. The lifting hand bends only at the elbow; the shoulder stays where it is, so the hip does not crunch. This puts even more weight on the supporting shoulder. One of the foundational exercises of the one-arm straddle, done as a static hold or shifted from hand to hand.

DOSE Holds or shifts



Straddle side bend



Fingertip side bend

Straddle side bends and fingertip side bends

The most important exercises for controlling the hips laterally. During a straddle lean, the lats and obliques pull the hip down towards the weight-bearing shoulder. This builds hip control and strength and stretches the side for a deeper bend. A deep bend lowers the centre of mass and makes balance easier, but holding it takes flexibility and strength; for learning the one-arm, side bends are mainly for being able to correct the pelvis when it drifts.

- Legs solid: the pelvis bends as one piece with the legs.
- The standing shoulder does not collapse inwards and stays elevated.
- On the fingertips the body moves inwards, but the head moves away from the standing shoulder.
- Practise stomach to the wall, toes a few centimetres away: touching the wall means the legs have drifted out of the frontal plane.

A variation with the bottom leg moving into the sagittal plane is more advanced and serves a different purpose. Any form of this drill improves hip control.



Shape change: straddle



Shape change: towards full

Piano shape changes

Changing leg shapes during a piano-fingers lean is a step up: each leg movement shifts the pelvis and forces more corrections. Keep the hips in position and the legs straight and tight as they move. The hardest transition is from straddle to full, because the legs travel far from the centre of mass and cause bigger deviations.



Hold



Lean before the lift



Arm lift

One-arm holds and arm lifts

Once a hand can lift off for a moment and return without the floating shoulder moving, add this to the routine: leans with short lift-offs are enough, not necessarily full straddle holds. This is where the one-arm itself is practised; drills cannot truly replicate it, except very specific ones such as holding a chair with the floating hand.

- Lift the arm without lifting the shoulder; the hip must not rotate. Prevent rotation by internally rotating the standing shoulder, pushing through the back and elevating the scapula.
- Easiest with the floating hand low and in line with the opposite leg; the higher it goes, the more side bend is needed.
- Gaze stays on the standing hand.
- Hips and legs stay put or bend slightly to the outside: that is easier to correct than falling over the floating hand.
- Both shoulders keep the same relationship as in a two-arm handstand; never let them, especially the floating one, depress.

SUMMARY

With these drills it is possible to build a more solid handstand and a solid one-arm straddle. Many more drills exist, and variable practice belongs in every programme: the positions you must correct from on one arm are countless and cannot all be predicted.

V

Supplementation, warm-up and rehabilitation

Less load on tendons and joints, more uninterrupted progress

Supplementary work builds strength and reduces the load on tendons and joints. That keeps inflammation, overuse injuries and pain away, so progress continues without unnecessary deloads or skipped sessions.



External rotation



Rotation with abduction



Seated variation

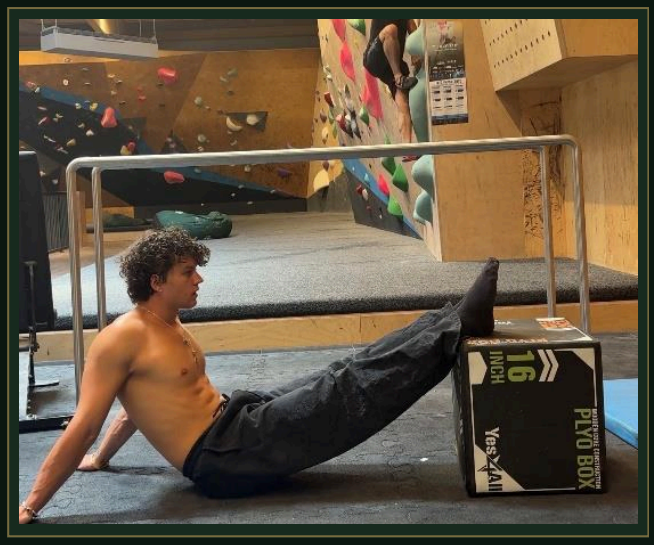
Rotator cuff strengthening

Shoulder external and internal rotations, with and without the arm abducted, promote blood flow and strengthen the rotator cuff, which is essential for stable, healthy shoulders over a hand-balancing career. Done lightly in the warm-up, they raise temperature and activate the shoulder stabilisers before a session. Done harder, mostly at the end of shorter sessions and with enough recovery afterwards, they build lasting stability and help prevent injury.

DOSE Light in warm-up, harder at the end



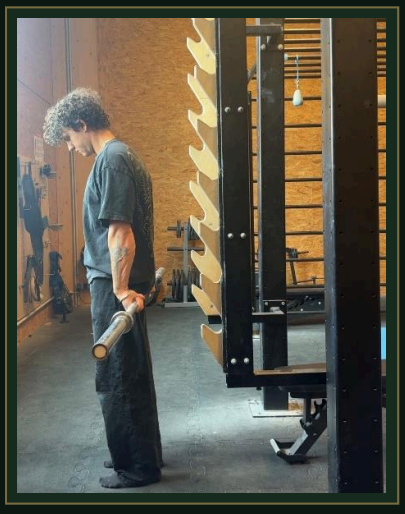
Hollow body position



Variation

Body position: hollow with fully extended legs

In a handstand the abdominal wall tilts the pelvis posteriorly while the hamstrings and glutes fully extend the hip to keep the line. Exercises like this one train that synergy together with shoulder mobility. Pair them with holding the same shape on the hands against the wall so it carries over; the hollow body hold prepares the same hip and leg position.



Wrist curls

Wrist strengthening

Inflammation of the wrist joint is the most common injury and source of pain in hand-balancing. Prevent it with a thorough wrist warm-up (wrist curls, extensions and loading the joint on the floor) and with heavier wrist strengthening done without bodyweight on the joint. The wrist then works in a stretched rather than compressed position, and the strengthened flexors take load off the joint and tendons during practice.

One of the most effective variations is the position shown: the wrist does not go into full dorsiflexion, which keeps tension through the whole movement and makes the curl comfortable.

DOSE Heavier, off the hands

Leg flexibility

Train flexibility with stretching and with weight-bearing in end-range positions. It allows deeper shapes, such as a wider straddle that lowers the centre of mass, and more impressive shapes on the hands. Added weight strengthens the muscles at end range, giving the hips more usable range of motion.

VI

Structuring a session

Skill or conditioning, and how to coach each client

Separate skill-focused sessions from strength and conditioning sessions.

Skill sessions

Sets stop short of all-out, so energy and movement quality last for longer practice. Sessions are longer overall, as less fatigue accumulates.

Conditioning sessions

More intense sets with longer rests, so performance (for example reps per set) holds up across the session.

Instruction should be tailored to the client. Some are highly intrinsically motivated and need clear, precise and detailed instruction with direct, relevant feedback rather than extra encouragement. Others benefit more from positive reinforcement, because their self-efficacy is lower; for them, supportive feedback can matter more than in-depth instruction, building motivation and long-term engagement. Most practitioners need a mix of both, so every session sits somewhere on the matrix below.

The more advanced the practitioner, the more sessions should be purely skill-based, with short bouts of extra conditioning. Early in learning a skill, conditioning sessions matter more: they build tolerance for the load the skill puts on the body.

Training type → / *Feedback type ↓*	Highly physical Short, intense bouts with long rests	Mixed Medium bouts of lower intensity, medium rests	Highly technical Lower intensity, medium rests to avoid fatigue
Highly supportive Positive feedback, for clients still building intrinsic motivation			
Mixed Encouragement plus clear instruction		*Most sessions*	
Highly directive Plain, practical feedback in depth, for highly self-motivated clients			

Where a session sits depends on the client and the goal; most land near the middle.

I Warm-up

Prepare the body for this session in particular. Start with the most overuse-prone areas and move to the least: wrists and shoulders first, then hips. Follow with a skill-specific warm-up, a regressed version of the session's main exercise. Leave enough time between warm-up exercises, and before the main work, for circulation and muscle temperature to rise.

II Core of the session

Follow the session's goal, using the drills above that match the desired outcome. The type of instruction, rest times and choice of drills all depend on that goal.

III Stretching and supplementation

Let the session's length and intensity set the amount, and aim it at the deficits observed during the session: if a practitioner struggles with posterior pelvic tilt, add hollow-body work. Stretching always belongs in a hand-balancing session, with a focus on side and middle splits.

IN SHORT

This matrix guides a coach in structuring sessions and instructing clients. It is most useful for clients bridging the gap between the two-arm handstand and their first steps on one arm, with general hand-balancing and handstand principles, and a focus on the one-arm straddle: the most common way into one-arm hand-balancing.

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