Methods of learning to balance and ride a bicycle
Descriptions, advantages, disadvantages and ranked effectiveness in maximising learner success rates

Maximising the number of individuals, particularly children, who learn to balance and ride a bicycle is very important for them, society, the environment and the cycling industry. Therefore the most effective method needs determining and promoting by cycling organisations.

Problems in learning to balance

(i) Pedalling causes the most complex and worst imbalances because each pedal push varies in strength and is off the bike`s centreline.

(ii) Lateral instability is due to the narrow tyre widths. Its unvarying nature makes it much easier to manage.

(iii) Centrifugal force from turns rarely/never causes problems. Most learners (a) are used to coping with it in running turns and (b) minimise it by turning gently until cycling without assistance and then improve gradually.

Balancing involves keeping the combined "bike and rider" centre of gravity close to vertically above the line joining the ground contacts of the wheels. This mainly by balance correcting leans, fine-tuned by handle bar steers.

Frequent learning stages (key):- each time each "bold" heading appears it means what follows it here:- (i) **Stabilised Stage 1:** means learning to steer, brake and pedal while bike is fully stabilised giving Advantage (a). Resulting faster pedalling/speed helps balance learning giving Advantage (b). Advantages (a) and (b) are therefore omitted from advantages listed for all methods starting with Stabilised Stage 1, so any additional advantages start with (c).

(ii) **Final Stage:** (desirable or essential for all methods.) Remove stabilisers if present. Run holding back of saddle to support pedalling learner. Reduce support and then let go if/as can feel learner`s balance improving.

1. Balance Training Stabilisers (BTS)

Stabilised Stage 1: with stabiliser wheels in outer positions. **Stage 2:** adjust stabiliser wheels, in stages, closer and closer to bike`s rear wheel. Practice sessions pedalling in each wheel position improve balance gradually. **Final Stage:** should be extremely short.

1.1 Advantages (c) stability-wise like reducing very wide rear tyre, in gradual stages, to less stable and wide one. ie. _very importantly_ BTS learners face no "big step". (d) BTS stabiliser wheel ground contacts maintain, and help learners habituate to, same close to vertical angular range in any wheel adjustment position. Feeling these contacts assists balance and reminds learners that that angular range limit has been reached and a balance correction may be needed. Unstabilised cyclists normally keep within a similar range.

(e) importantly, balancing learned while pedalling, which causes worst imbalances. (f) very convincingly, first three BTS learners all succeeded despite poorer balance due to disabilities.

(g) recommended by relevant disability charities.

1.2 Disadvantages (a) more expensive until mass produced.

2. Teacher balance assistance (TBA)

Stabilised Stage 1: sometimes omitted. **Final Stage:**

2.1 Advantages (c) cheap. (d) effective for many.

2.2 Disadvantages (a) sudden, complete removal of stabiliser support is a "big step" - too big for some. (b) insufficient teacher time or fitness.

3. Tilt and steer (TAS)

Stage 1: learner straddles bike, feet on ground. Practices (a) tilting bike and (b) correcting tilt by handle bar steer in direction of tilt. **Stage 2:** teacher supports via rear frame and tilts in random directions. Learner, on saddle with feet on pedals, steers into tilts and for bigger tilts makes balance correcting leans. **Final Stage:**

3.1 Advantages (a) cheap. (b) fast for some. (c) teaches lateral instability balancing, well.

3.2 Disadvantages (a) no stabiliser support while learning pedalling, braking and steering.

(b) simultaneous learning of (i) pedalling and (ii) balancing of complicated imbalances pedalling causes, a "big step". (c) balance correcting leans much more important in balancing than handle bar steers into tilts. (d) much teacher help needed.

4. <u>Scooting (hobby horse) (SHH)</u>
Stage 1 : either learner sits astride pedal-less "hobby horse", pushing along with feet. Balances longer and longer until can ride down longish gentle slopes without using feet.
Or "make" hobby horse for above purpose. (Remove pedals and lower saddle of bike suitable for learner to pedal later.) **Final Stage:**
4.1 Advantages: as 3.1
4.2 Disadvantages : as 3.2 (a) and (b), plus (c) considerable cost of hobby horse, if used.
5. <u>Raising conventional stabilisers wheels (RCSW)</u>
Stabilised Stage 1: Stage 2: stabiliser wheels raised in stages. Practice sessions at each stage. **Final Stage:**
5.1 Advantages: (c) cheap.
5.2 Disadvantages (a) seriously flawed because alarmingly and unhelpfully bike tilt angle and downward velocity, when stabiliser wheels ground, increases at each stage.
6. <u>Sprung stabilisers (SS)</u>
Stabilised Stage 1: only sort seen is used first, like conventional stabilisers, in "fixed" mode.
Stage 2: in "confidence" (sprung) mode, spring force strengthens as learner leans further from vertical. i.e. directly opposite to gravity`s effect in unstabilised cycling. Surely such springing (a) helps learner keep nearly effortlessly upright and therefore (b) produces little balance improvement. Stabiliser removal will therefore be a very "big step" and "reality shock". **Final Stage:** surely therefore essential and probably fairly prolonged here.
6.1 Advantages: only usual (a) and (b) from Stabilised Stage 1.
6.2 Disadvantages (a) more expensive and (b) from Stage 2, seriously flawed and worse than conventional stabilisers.
<u>Conclusions</u>
1.The greater the learners physical ability and determination (a) the more methods will work and (b) the faster success particularly if best method used (or at least one adequate for that learner) and progress "pushed".
2. Balance Training Stabilisers` listed advantages show that its the easiest, most effective and logical method, probably for **any learner**, but particularly the nervous or those with poorer balance. These stabilisers therefore deserve the strong world-wide long term backing of the cycle industry. I hope this now happens, to maximise the numbers who successfully learn to balance and ride a bike (patent abandoned to help).
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