





## PERSONAL LIGHT ELECTRIC VEHICLES (PLEVs) - GROUP WEIGHTED DECISION MATRIX COMPARISON CHART

This is an evaluative comparison of lightweight portable transport tools rated for urban commuting using the Group Average Matrix Evaluation (GAME) system (a term invented by Luc the author). Transport tools are in the left column & factors (considerations) are on the top row. Each factor has a **weighting (importance value)** which is the average **importance number** given by participants. For example, participants saw the portability factor as important so gave it high **importance numbers** with an average of **8.4 (weighting)**. Speed was seen as less important so the average is just **5.6 (weighting)**. Each transport tool is given an **achievement score** which is how well it performs in that factor area. For example, the Urmo with a handle gets an **achievement score of 9.5** for the portability factor because it's so light, small & can be pushed by the handle. The **achievement score** is multiplied by the **weighting** to produce a **weighting x achievement score**. So for the Urmo in portability it's **8.4 (weighting) x 9.5 (achievement score) = 79.8 (weighting x achievement score)**. The **overall score** for each gadget is the sum total of all **weighting x achievement** scores. Based on present data in this table the E-TWOW Booster V scooter is the highest scoring transport tool.






factors (considerations)⇒		UP & DOWN KERBS (or other large obstacles & ledges)	MANUAL USE (rolling freely without motor - to save battery & get exercise!)	RIDER SAFETY (precision of steering, ease of riding, stability on smooth surfaces & prevention of vehicle rolling)	RANGE (distance possible after full charge)	SIZE FOR HANDY STORAGE (when folded)	PORTABILITY (walking around with it - pushing or carrying)	TOP SPEED (how fast it will go)	OFF-ROAD RIDING (rough ground, sand, dirt tracks, mud, grass & so on)	SMOOTHNESS ON NORMAL CITY SURFACE (Factors: Suspension with tire size & material)	DURABILITY (Sturdiness, lack of faults, lack of need for replacement parts or maintenance) T=Tires MP = moving parts	CHARGE TIME (lower weighting because info is highly variable)	MAX RIDER WEIGHT	LIGHTS	MOTOR (watts)	SIZE (see handy storage)
Participant 1	M	10	10	10	10	5	7	5	0	10	10	5	0	0	NA	NA
Participant 2	L	5	9	10	6	8	9	6	2	9	7	2	2	5	NA	NA
Participant 3	D	5	5	8	8	8	9	8	3	9	7	3	1	2	NA	NA
Participant 4	P	7	8	10	7	9	10	7	2	7	7	3	1	1	NA	NA
Participant 5	J	2	8	10	4	4	7	2	3	5	2	1	1	4	NA	NA
<b>WEIGHTINGS (AVERAGE IMPORTANCE VALUES) (1 to 10) (1 = unimportant, 5 = average, 10 = highly important)</b>		<b>5.8</b>	<b>8</b>	<b>9.6</b>	<b>7</b>	<b>6.8</b>	<b>8.4</b>	<b>5.6</b>	<b>2</b>	<b>8</b>	<b>6.6</b>	<b>2.8</b>	<b>1</b>	<b>2.4</b>	<b>NA</b>	<b>NA</b>

### Transport Gadgets (\* = personally owned or used by author, OOP= Out Of Production at time of writing)

	<b>Walkcar (MTKSR-5)</b>	up no, d no	no*	Limited	7k	Tiny	2.9 kg	15kmph	Unsuitable	Front & back	T solid, MP 4	1 hour	80kg?	None		21.5x34.6x7.4 cm 5,504.86cm³ Tires about 7cm
	Achievement scores 1 to 10⇒	0	0	5	0.5	10	10	2.5	3	2	6	9	6	0		
	Weighting x Achievement ⇒	0	0	48	3.5	68	84	14	6	16	39.6	25.2	6	0		
	Overall Score ⇒	<b>310.3</b> Fits into your backpack like a laptop computer! Smooth surfaces only. The device stops when you step off - an important safety feature. Easy to learn.														
	<b>Premier</b>	up no, d roll	no	Limited	19k	small	14kg	19kmph	Unsuitable	No suspension	T solid, MP 3	1-2 hours	110 kg	Both	400wx2	70x22x23 cm 35 420 cm³ Tires 22cm
	Achievement scores 1 to 10⇒	1	0	3.5	3	8.5	7	4	4	2	7	8	9	10		
	Weighting x Achievement ⇒	5.8	0	33.6	21	57.8	58.8	22.4	8	16	46.2	22.4	9	24		
	Overall Score ⇒	<b>325</b> Top rated hoverboard (foot scooter), safety certificates & IP56 water resistance rating. Hoverboards are fun but not so easy to stay on. Wide path = unsuitable for busy areas.														
	<b>Iota Trax (OOP)</b>	up hop, d roll	no	Limited	13k	Tiny*	6.8kg	12kmph	OK	No suspension	T air, MP 4	40 minutes	81 kg	Front*	1000w	Approx: 17.8x22x21.5 cm approx 8500 cm³ Tires 20cm
	Achievement scores 1 to 10⇒	6	0	3	1	10	9.5	1	5.25	4.25	2	9.5	6	7		
	Weighting x Achievement ⇒	34.8	0	28.8	7	68	79.8	5.6	10.5	34	13.2	26.6	6	16.8		
	Overall Score ⇒	<b>331.1</b> Similar to the electric wheels (eucs) but easier to learn, more compact and slower. The option of stepping off to the sides is an advantage over the Urmo.														
	<b>Board cruiser</b>	up 'flick', d roll	Good	Limited	15k	Tiny	5.5kg	40kmph	Unsuitable	No suspension	T solid, MP 5	45 mins (fast)	100kg?	None	2000w	78x25x6cm 11 700cm³ (or less) Tires 8 or 9cm (two options)
	Achievement scores 1 to 10⇒	6	8.5	5	2	9.5	9.5	10	1	0	5	10	8	0		
	Weighting x Achievement ⇒	34.8	68	48	14	64.6	79.8	56	2	0	33	28	8	0		
	Overall Score ⇒	<b>436.2</b> Has very important safety features: top speed unlocked after trial period & kick start only. Also IP65 waterproof & a swappable battery! The motor unit actually fits on any deck!														

	<b>Aero (electric shoes)</b>	up & d step	v. good	v. good	11.3k	Tiny	3.8kg <sup>(together)</sup>	11.3kmph	Unsuitable	No suspension	F solid, MP 14	1.5 hours	100kg	None	350w each	approx.31x26x7cm approx.5642 cm³ Tires approx 5cm
	Achievement scores 1 to 10⇒	10	10	9.5	1	10	10	1	0	0	0	8	8	0		
	Weighting x Achievement ⇒	58	80	91.2	7	68	84	5.6	0	0	0	22.4	8	0		
	Overall Score ⇒	<b>424.2</b> Not rollerskates but walking enhancers from Shift Robotics! They strap around your regular shoes so you can take them off and walk normally again. A bit noisy but quite highly rated.														
	<b>Pint</b>	up 'nudge', d roll	no	Limited	10-13k	medium	10.5kg	26kmph	Good	No suspension	T air, MP 1	50 mins	110kg	Both	750w	Size: 22x26.5x68.9 cm 40 169cm³ Tires 26.5cm
	Achievement scores 1 to 10⇒	4	0	4	1.5	8	8	6	7.75	4.75	7	9	9	10		
	Weighting x Achievement ⇒	23.2	0	38.4	10.5	54.4	67.2	33.6	15.5	38	46.2	25.2	9	24		
	Overall Score ⇒	<b>385.2</b> Smaller more nimble version of the XR, far less range, slightly less speed														
	<b>XR</b>	up 'nudge', d roll	no	Limited	20-30k	medium	12.5kg	30kmph	Good	No suspension	T air, MP 1	1 hour	125kg	Both	750w	Size: 23x29x76 cm 50 692cm³ Tires 29cm
	Achievement scores 1 to 10⇒	3.5	0	4	6	7.5	7.5	7.5	7.75	4.75	7	9	10	10		
	Weighting x Achievement ⇒	20.3	0	38.4	42	51	63	42	15.5	38	46.2	25.2	10	24		
	Overall Score ⇒	<b>415.6</b> Perhaps if 'cool' & 'fun' were included this would win. The beauty is in the simplicity - it's just a wheel! Easy to learn but safety issues remain - mainly nosedives and rolling away by itself.														
	<b>no handle</b>	up no, d roll	no	Limited	20k	V. small	7kg	15kmph	OK	No suspension	T foam, MP 3	2 hours	120kg	Yes	2x900w	Folded size: 18x33.5x34cm 20 502cm³ Tires over 30cm
	Achievement scores 1 to 10⇒	4.5	0	5.5	3	9	9	2.5	6.5	4.5	7	7	10	3		
	Weighting x Achievement ⇒	26.1	0	52.8	21	61.2	75.6	14	13	36	46.2	19.6	10	7.2		
	Overall Score ⇒	<b>382.7</b> Automatically folds up in two seconds when picked up! The prototype was a little noisy but later models hopefully quieter. Unfortunately the company filed for insolvency, hopefully someone can revive the idea.														
	<b>with optional handle</b>	up & d step	no	Good	20k	small	7.7kg	15kmph	OK	No suspension	T foam, MP 4	2 hours	120kg	Yes	2x900w	Folded size: 18x33.5x34cm 20 502cm³ Tires over 30cm
	Achievement scores 1 to 10⇒	10	0	6.5	3	8	9.5	2.5	6.5	4.5	6	7	10	3		
	Weighting x Achievement ⇒	58	0	62.4	21	54.4	79.8	14	13	36	39.6	19.6	10	7.2		
	Overall Score ⇒	<b>415</b> Handle helps to step up curbs, gives more control & safety. May be a way to transport boxes or other large items. One handed is fine. Good for police, airport workers, postal workers & tour guides.														














### Self-balancing Electric Wheels (ewheels), aka: Electric Unicycles (Eucs). Takes time to learn! Master it fully before riding in public (we need EUC schools) & never push to max speed (not safe).














	<b>E20</b>	up nop/step, d roll/step	no	Limited	30k	medium	13.5kg	20kmph	OK	No suspension	T air, MP 4	3.5 hours	100kg	Both	900w	Approx: 44x50.7x25.3 cm approx 56 439 cm³ Tires 35.56cm
	Achievement scores 1 to 10→	7.5	0	4.5	6	7.5	8.5	4	7.75	5.75	2	4	8	10		
	Weighting x Achievement →	43.5	0	43.2	42	51	71.4	22.4	15.5	46	13.2	11.2	8	24		
	Overall Score →	<b>391.4</b> A good durable wheel for beginners but two adjacent wheels can mean lateral balance issues & tricky turning. Ability to step off to the sides is an advantage over 'hoverboards'.														
	<b>V8 (Solowheel Glide 3) (oop)</b>	up hop/step, d roll/step	no	Limited	45-50k	Small	13.8kg	30kmph	Good	No suspension	T air, MP 4	4-5 hours	120kg	Both	800w	54x45x15cm 36 450cm³ Tires 40cm
	Achievement scores 1 to 10⇒	8	0	5.5	9.25	8.5	8.5	7.5	10	6.25	4	2	10	10		
	Weighting x Achievement ⇒	46.4	0	52.8	64.75	57.8	71.4	42	20	50	26.4	5.6	10	24		
	Overall Score ⇒	<b>471.15</b> One of the most popular ewheels as of 2022. Motor switches off automatically when lifted & has retractable handle. From the inventor of ewheels, hoverboards & the Iota trax: Shane Chen of Inventist.														
	<b>V8F</b>	up hop/step, d roll/step	no	Limited	50-55k	Small	14.5kg	35kmph	Good	No suspension	T air, MP 4	4-5 hours	120kg	Both	1000w	54x46x15cm 37 260cm³ Tires 40cm
	Achievement scores 1 to 10⇒	7.5	0	5.5	9.5	8.5	8.25	9	10	6.25	4	2	10	10		
	Weighting x Achievement ⇒	43.5	0	52.8	66.5	57.8	69.3	50.4	20	50	26.4	5.6	10	24		
	Overall Score ⇒	<b>476.3</b> An upgraded version of the V8 with more power, range and speed as well as larger footplates and side pads.														
	<b>V8S</b>	up hop/step, d roll/step	no	Limited	60k	Small	15.8kg	35kmph	Good	No suspension	T air, MP 4	4-5 hours	120kg	Both	1000w	54x46x15cm 37 260cm³ Tires 40cm
	Achievement scores 1 to 10⇒	7.5	0	5.5	9.75	8.5	8.25	9	10	6.25	4	2	10	10		
	Weighting x Achievement ⇒	43.5	0	52.8	68.25	57.8	69.3	50.4	20	50	26.4	5.6	10	24		
	Overall Score ⇒	<b>478.05</b> An upgraded version of the V8F with even more range but slightly heavier. Ambient lights removed on some models.														
	<b>16S</b>	up hop/step, d roll/step	no	Limited	70k	Small	17.5kg	35kmph	Good	No suspension	T air, MP 4	about 6 hours	110kg	Both	1200w	50.6x46.3x19.6cm 45 918cm³ Tires 41.7cm
	Achievement scores 1 to 10⇒	6	0	5.5	10	8	7.5	9	10	6.25	4	0	9	10		
	Weighting x Achievement ⇒	34.8	0	52.8	70	54.4	63	50.4	20	50	26.4	0	9	24		
	Overall Score ⇒	<b>454.8</b> Very highly rated wheel & a good size for beginners. Good replacement for a car if you live out in the open country with rough terrain. Kingsong s series are known to be among the safest of ewheels.														

factors (considerations)⇒

UP & DOWN KERBS (or other large obstacles & ledges)	MANUAL USE (rolling freely without motor - to save battery get exercise!)	RIDER SAFETY (precision of steering, ease of riding, stability on smooth surfaces & prevention of vehicle rolling off by itself)	RANGE (distance possible after full charge)	SIZE FOR HANDY STORAGE (when folded)	PORTABILITY (walking around with it - pushing or carrying)	TOP SPEED (how fast it will go)	OFF-ROAD RIDING (rough ground, sand, dirt tracks, mud, grass & so on)	SMOOTHNESS ON NORMAL CITY SURFACE (Factors: Suspension with tire size & material)	DURABILITY (Sturdiness, lack of faults, lack of need for replacement parts or maintenance) T=Tires MP = moving parts	CHARGE TIME (suggest you give this a lower weighting because info is highly variable)	MAX RIDER WEIGHT	LIGHTS	MOTOR (watts)	SIZE (see handy storage)
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**Scooters: Often the best choice for commuting thanks to the handles which allow more control & convenience - you can even hang bags off the handles.**

	Dastrad E9	up & d step	Good	Good	10k	small	7.9kg	15kmph	OK	Front & back	T solid, MP 9	2.5 hours	80kg	None	150w	Folded size: 96x32x13.5
	Achievement scores 1 to 10⇒	9	9	8.75	1	8	9	2.5	4.25	4	1	6	6	0		41 472cm³
	Weighting x Achievement ⇒	52.2	72	84	7	54.4	75.6	14	8.5	32	6.6	16.8	6	0		Tires 20cm
	Overall Score ⇒	<b>429.1</b> Also branded as Icewheel. A kick assist scooter that can be used like a normal scooter, no throttle or brake on handlebar. Absurdly the on off switch is under the deck by the wheel!														
	EcoReco XS	up & d step	OK?	Good	21k	small	7.7kg	21kmph	OK	Front suspension	T solid, MP 8	4.5 hours	100kg	Front	?	Folded size: 104x25x15cm
	Achievement scores 1 to 10⇒	8	8	7.75	3	8.5	9.5	4.5	4.5	3.5	2	2	8	7		39 000cm³
	Weighting x Achievement ⇒	46.4	64	74.4	21	57.8	79.8	25.2	9	28	13.2	5.6	8	16.8		Tires 15cm(F) 12.7cm(B)
	Overall Score ⇒	<b>449.2</b> Seems like a good balance of portability and other factors. Not the smoothest of rides though.														
	E-TWOW GT Sport	up & d step	OK	Good	50k	medium	13kg	46kmph	OK	Front & back	T solid, MP11	3-4 hours	100kg	Both	700w	Folded size: 105x33x14cm
	Achievement scores 1 to 10⇒	6.5	5.5	8.5	9.25	8	8.5	10	6	5	0	4	8	10		48 510cm³
	Weighting x Achievement ⇒	37.7	44	81.6	64.75	54.4	71.4	56	12	40	0	11.2	8	24		Tires 20cm
	Overall Score ⇒	<b>505.05</b> An even quicker version of the GT below.														
	E-TWOW Booster GT	up & d step	OK	Good	40k	medium	11.9kg	40kmph	OK	Front & back	T solid, MP11	3-4 hours	100kg	Both	700w	Folded size: 105x33x14cm
	Achievement scores 1 to 10⇒	6.5	5.5	8.5	8	8	8.75	10	6	5	0	4	8	10		48 510cm³
	Weighting x Achievement ⇒	37.7	44	81.6	56	54.4	73.5	56	12	40	0	11.2	8	24		Tires 20cm
	Overall Score ⇒	<b>498.4</b> A more powerful version of the Booster V (below) with a longer deck.														
	E-TWOW Booster V	up & d step	OK	Good	38k	medium	11.3kg	38kmph	OK	Front & back	T solid, MP11	2-3 hours	110kg	Both	500w	Folded size: 97x33x14cm
	Achievement scores 1 to 10⇒	7	6	8.5	8	8	9	10	6	5	0	6	9	10		44 814cm³
	Weighting x Achievement ⇒	40.6	48	81.6	56	54.4	75.6	56	12	40	0	16.8	9	24		Tires 20cm
	Overall Score ⇒	<b>514</b> A slightly quicker version of the Booster Plus S below.														
	E-TWOW Booster plus S	up & d step	OK	Good	35k	medium	11kg	35kmph	OK	Front & back	T solid, MP11	2-3 hours	110kg	Both	500w	Folded size: 97x33x14cm
	Achievement scores 1 to 10⇒	7	6	8.5	7	8	9	9	6	5	0	6	9	10		44 814cm³
	Weighting x Achievement ⇒	40.6	48	81.6	49	54.4	75.6	50.4	12	40	0	16.8	9	24		Tires 20cm
	Overall Score ⇒	<b>501.4</b> Remarkable speed and range for such a light scooter. Very expensive and as with other electric scooters not completely waterproof, so don't get caught in heavy rain!														
	EVO VT5	up & d step	OK	Good	15k	large	11.5kg	25kmph	OK	Front suspension	T Front air, Back solid, MP 7	4-5 hours	100kg	Both	350	Folded Size: 107x43.5x35cm
	Achievement scores 1 to 10⇒	6.5	6.5	8.5	2	1.5	8.75	6	6.5	5.5	1	2	8	10		162 908cm³
	Weighting x Achievement ⇒	37.7	52	81.6	14	10.2	73.5	33.6	13	44	6.6	5.6	8	24		Tires 20cm
	Overall Score ⇒	<b>403.8</b> Looks great in my view, scores are low owing to large size when folded & limited range.														
	Gotrax G1 Glider Folding	up & d step	OK?	Good	14k	medium	9kg	26kmph	Unsuitable	No suspension	T solid, MP 6	3 hours	100kg	Front	250w	Folded size: 100x36.7x15.9cm
	Achievement scores 1 to 10⇒	8	7.5	7.5	2	7.5	9.25	6	2	1	4	5	8	7		59 200cm³
	Weighting x Achievement ⇒	46.4	60	72	14	51	77.7	33.6	4	8	26.4	14	8	16.8		Tires 14cm
	Overall Score ⇒	<b>431.9</b> Budget scooter - very quick but not good on rough terrain. Extremely portable and storable because folds very well.														
	*Inokim Light 2 (super)	up & d step	OK	v. good	30k	medium	13.7kg	35kmph	OK	No suspension	T air, MP 9	6 hours	100kg	Both	350w	Folded size: 95x36x25cm
	Achievement scores 1 to 10⇒	6	6	9.5	6	6	8.5	9	6	4.25	0	0	8	10		85 500cm³
	Weighting x Achievement ⇒	34.8	48	91.2	42	40.8	71.4	50.4	12	34	0	0	8	24		Tires 21.59
	Overall Score ⇒	<b>456.6</b> A well-built, durable scooter designed with safety in mind - roll to start feature, stem lock & excellent dual drum brakes offering a short stopping distance. Not very waterproof (only IPX4 rating).														
	Inokim Light 2 Max	up & d step	OK	v. good	32k	medium	14kg	35kmph	OK	No suspension	T air, MP 9	7 hours	100kg	Both	350w	Folded size: 95x36x25cm
	Achievement scores 1 to 10⇒	6	6	9.5	6.5	6	8.5	9	6	4.25	0	0	8	10		85 500cm³
	Weighting x Achievement ⇒	34.8	48	91.2	45.5	40.8	71.4	50.4	12	34	0	0	8	24		Tires 21.59
	Overall Score ⇒	<b>460.1</b> Same as Light 2 super model but with slightly more power and range as well as better waterproofing for battery														
	KUGOO S1	up & d step	OK	Good	25-30k	medium	11kg	30kmph	OK	Front & back	T solid, MP 11	3.5 hours	120kg	Both	350w	Folded size: 96x21x33cm
	Achievement scores 1 to 10⇒	7	6	8	6	7	8	7.5	6	5	0	4	10	10		66 528cm³
	Weighting x Achievement ⇒	40.6	48	76.8	42	47.6	67.2	42	12	40	0	11.2	10	24		Tires 20cm
	Overall Score ⇒	<b>461.4</b> Fairly similar to the Zoom Stryder but with less range & less smooth to ride. Handles fold away well but tend to wobble. Very cheap scooter but decent specs.														
	*KUGOO S1 PRO	up & d step	OK	Good	25-30k	medium	11kg	30kmph	OK	Front & back	T honeycomb, MP 11	3.5 hours	120kg	Both	350w	Folded size: 96x21x33cm
	Achievement scores 1 to 10⇒	7	6	8.5	6	7	9	7.5	7.5	6.5	0	4	10	10		66 528cm³
	Weighting x Achievement ⇒	40.6	48	81.6	42	47.6	75.6	42	15	52	0	11.2	10	24		Tires 20cm
	Overall Score ⇒	<b>489.6</b> Kugoo S1 but with more power & honeycomb tyres - not a smooth ride though so I put jelly pads on the deck. Also tape around handles to stop wobbling. My one was fine for two years but then had to fix.														
	*Meqawheels S1 Pro	up & d step	OK	Good	8k	small	7.7kg	24kmph	OK	Front suspension	T solid, MP 10	2 hours	90kg	Brake lights	250w	Folded size: 86x29x19cm

	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>424.1</b>	8 46.4	8 64	7.75 74.4	0.5 3.5	8 54.4	9.5 79.8	5.5 30.8	4.5 9	3.5 28	0 0	7 19.6	7 7	3 7.2	47 386cm³ Tires 15.4cm(F) 14cm(B)	
Micro	Colibri	up & d step	Good	Good	12k	large	9.9kg	25kmph	OK	Front suspension	T solid, MP 7	2 hours	100kg	Both	200w	94.3x56x46xcm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>426.4</b>	8 46.4	8.5 68	8 76.8	1.5 10.5	0 0	9.25 77.7	6 33.6	5 10	4 32	3 19.8	7 19.6	8 8	10 24	242 144cm³ Tires 20cm(F), 12.5cm(B)	
Micro	Explorer	up & d step	OK	Good	25-30k	medium	13.5kg	30kmph	OK	Front & back	T solid, MP11	3.5 hours	100kg	Both	500w	Folded size: 92.8x14.5x34 cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>475.4</b>	6 34.8	5 40	8.5 81.6	6 42	8 54.4	8.5 71.4	7.5 42	6 12	5 40	0 0	9 25.2	8 8	10 24	45 750cm³ Tires 20cm	
*Micro	Falcon <small>(oop)</small>	up & d step	Good	Good	10k	medium	7.9kg	25kmph	Unsuitable	No suspension	T solid, MP 6	1 hour	100kg	Brake lights	500w	Folded size: 78x50x15cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>450.4</b>	8 46.4	9 72	8 76.8	1 7	7.5 51	9.5 79.8	6 33.6	2.5 5	1.5 12	4 26.4	9 25.2	8 8	3 7.2	58 500cm³ Tires 15cm(F) 12.5cm(B)	
*Micro	flex deluxe	up & d step	Good	Good	NA	v. small	4.85kg	(NA)	Unsuitable	Flexi board	T solid, MP 7	0 hours	100kg	None	NA	Folded size: 64x11x22cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>433.2</b>	9 52.2	10 80	8.5 81.6	0 0	9.5 64.6	10 84	0 0	1.5 3	1.5 12	3 19.8	10 28	8 8	0 0	15 488cm³ Tires 20cm	
RCB	R15	up & d step	Good	Good	16k	medium	7.5kg	20kmph	Unsuitable	No suspension	T solid, MP 7	6 hours	80kg	None	150w	Folded size: 88x44x27cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>387.7</b>	9 52.2	9 72	7.5 72	2.5 17.5	5 34	9.5 79.8	4 22.4	2 4	1 8	3 19.8	0 0	6 6	0 0	104 544cm³ Tires 14cm	
Segway	Ninebot ES2	up & d step	OK?	Good	25k	large	12.5kg	25kmph	OK	Front & back	T solid, MP 8	3.5 hours	100kg	Both	300w	Folded size: 113x43x40cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>409.7</b>	7 40.6	5.5 44	8.5 81.6	4 28	0 0	8.75 73.5	6 33.6	6 12	5 40	2 13.2	4 11.2	8 8	10 24	194 360cm³ Tires 20cm	
SoFlow	Air Aluminum	up & d step	OK	Good	18k	small	7.7kg	24kmph	OK	Front suspension	T solid, MP9	2 to 3 hours	100kg	Both	250w	Folded size: 99x14x20cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>455.6</b>	8 46.4	7 56	7.5 72	3 21	9 61.2	9.5 79.8	5.5 30.8	4.5 9	3 24	1 6.6	6 16.8	8 8	10 24	27 720cm³ Tires 13.97cm	
Voyager	Proton	up & d step	OK?	Good	16k	medium	9kg	24kmph	OK	Front suspension	T solid, MP7	Up to 4 hours	100kg	Front	250w	Folded size: 99x20x46cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>431.8</b>	8 46.4	7.5 60	7.5 72	2.5 17.5	5.5 37.4	9.25 77.7	5.5 30.8	4.5 9	3.5 28	3 19.8	3 8.4	8 8	7 16.8	91 080cm³ Tires small	
Xiaomi	Mi M365	up & d step	OK	Good	30k	large	12kg	25kmph	OK	No suspension	T air, MP 6	5 hours	100kg	Both	250w	Folded size: 108x43x49cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>394.6</b>	7 40.6	5.5 44	8.5 81.6	6 42	0 0	8.75 73.5	6 33.6	5.25 10.5	4.25 34	0 0	1 2.8	8 8	10 24	227 556cm³ Tires 22cm	
Zinc	Eco	up & d step	OK	Good	13k	medium	9.1kg	25kmph	OK	Front suspension	T solid, MP10	3 hours	80kg	Both	200w	Folded size: 102x43x34cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>403</b>	8 46.4	7.5 60	8 76.8	1.5 10.5	2.5 17	9.25 77.7	6 33.6	4.5 9	3.5 28	0 0	5 14	6 6	10 24	149 124 cm³ Tires 15.4cm(F) 14cm(B)	
*Zoom	Stryder EX <small>(oop)</small>	up & d step	OK	Good	30-35k	medium	11kg	30kmph	OK	Front & back	T solid, MP11	2 to 3 hours	110kg	Both	600w	Folded size: 95x15x33cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒ Overall Score ⇒ <b>483.2</b>	7 40.6	6 48	8 76.8	7 49	8 54.4	9 75.6	7.5 42	5.5 11	4.5 36	0 0	6 16.8	9 9	10 24	47 025cm³ Tires 19cm	
*Zoom	Stryder Pro <small>(oop)</small>	up & d step	OK	Good	35-40k	medium	12kg	35kmph	OK	Front & back	T solid, MP11	3 hours	110kg	Both	750w	Folded size: 95x15x33cm
	Achievement scores 1 to 10⇒ Weighting x Achievement ⇒	7 40.6	5.5 44	8 76.8	8 56	8 54.4	8.75 73.5	9 50.4	5.5 11	4.5 36	0 0	5 14	9 9	10 24	47 025cm³ Tires 19cm	

Rebranded as Zinc S1, Indi S1 & so on. A surprisingly smooth ride thanks to soft wheels & suspension. No mud guard, front light or display! Mine now works intermittently after about 2 years of riding.

Includes an active kick assist mode but with speed limited to 16kmph. Deck 10.8 cm high.

Twist grip throttle, hand brake, rubber deck & little flap for number plate (to be road legal). Known to be durable despite having lots of moving parts. Short stopping distance.

Kick assist motor allows change between manual & electric modes. Twist grip throttle, various ride modes & cruise control. Well built with excellent customer service from the Micro team.

The only non-electric tool here. The low deck helps when scooting. This would likely win if money & time spent on charging, price & carbon footprint were included factors. Not very smooth though.

Marketed as something for children and teenagers, but could be used by anyone under 80kgs.

One of the top of the range scooters with many features. Add a battery to turn it into the ES4 (heavier but faster with greater range). Not compact when folded because the folding hinge is set too high.

Deck is high up and not even with ground with a tiny wheel. But folds beautifully (hinge lower down = compact folding)

A cheap lightweight scooter.

The famous classic scooter used by companies like Bird (US) & Lime (UK). No suspension but air filled tyres help. Despite the low score this scooter provides one of the very best riding experiences.

Similar build to zinc S1 below but with more range and lights. Fixed handlebar though!

Excellent range of functions & known to be extremely durable. Handles fold in for easy storage. Accelerator & brake switches are fiddly but you can use Eco mode & cruise control for a smoother ride.



Overall Score → **489.7**

Same as Zoom Stryder Ex but heavier, more powerful with greater speed & range as well as lights. Update: Zoom no longer in business so no customer support available.

factors (considerations)⇒

UP & DOWN CURBS (or other large obstacles & ledges)	MANUAL USE (rolling freely without motor - save battery & get exercise)	RIDER SAFETY (precision of steering, ease of riding, stability on smooth surfaces & prevention of vehicle rolling off by itself)	RANGE (distance possible after full charge)	SIZE FOR HANDY STORAGE (when folded) (under a seat, in car boot, box, in a room & so on) Overall cubic cm (width x	PORTABILITY (walking around with it - pushing or carrying)	TOP SPEED (how fast it will go)	OFF-ROAD RIDING (rough ground, sand, dirt tracks, mud, grass & so on)	SMOOTHNESS ON NORMAL CITY SURFACE (Factors: Suspension with tire size & material)	DURABILITY (Sturdiness, lack of faults, lack of need for replacement parts or maintenance) T=Tires MP = moving parts	CHARGE TIME (lower weighting because info is highly variable)	MAX RIDER WEIGHT	LIGHTS	MOTOR	SIZE (see handy storage)
Step up = 5 points or Hop up = 3 points, Step down = 5 or Roll or hop down = 3 1 wheel or wheels on same plane (no front & back wheel) = 1 Minus points for weight: Over 5.5kgs - 0.5 Over 7kgs - 1 Over 8.5kgs - 1.5 Over 10 kgs - 2 Over 11.5 kgs - 2.5 Over 13kgs - 3 Over 14.5kgs - 3.5 Over 16 kgs - 4 Over 17.5 kgs - 5 Tyre size: Over 30cm 1 Over 35cm 1.5 Over 40cm 2	Naturally self-balancing without motor (e.g scooters) = 10 points Kick assist = 1 point added, Low deck (under 10cm) = 1 point, Motor -2 points (roll resistance), Minus points for weight: Over 5.5kgs - 0.5 Over 7kgs - 1 Over 8.5kgs - 1.5 Over 10 kgs - 2 Over 11.5 kgs - 2.5 Over 13kgs - 3 Over 14.5kgs - 3.5 Over 16 kgs - 4 Over 17.5 kgs - 5 Foot can be placed on ground for support = 1 OR Foot often in contact with ground (e.g. non-electric or kick assist scooters) = 2 Tire size: 10cm = 1 20cm = 2 30cm = 3 40cm = 4 Example: Zinc Eco = naturally self-balancing (10), low deck (1), hub motor (-2), over 8.5kg (-1.5) = 7.5 points	Handles = 3 (or other way of holding onto device while riding) OR Not likely to roll away by itself (e.g auto motor switch off when rider dismounts) = 2 0.5 points per wheel Roll without motor in case it falls (Two or more wheels in line of travel) = 2 Wide front wheel(s) (over 5 cm) = 0.75 Wide back wheel(s) (over 5 cm) = 0.25 Tread on front wheel(s) = 0.75 Tread on back wheel(s) = 0.25 (front is more important) One wheel devices count as front and back Foot often in contact with ground (e.g. non-electric or kick assist scooters) = 2 Tire size: 10cm = 1 20cm = 2 30cm = 3 40cm = 4 Lateral wobble from adjacent wheels (e.g. Inmotion E20, IOTA Trax) -1 Risk of bottom of deck catching on ground (e.g. scooters & skateboards) - 0.5 Risk of pedal clipping (e.g. EUCS) - 1 Foldable stem (scooters) - 1	Range in km shown left, score shown right 6 = 0.5 10 = 1 14 = 2 18 = 3 22 = 4 26 = 5 30 = 6 34 = 7 38 = 8 42 = 8.5 46 = 9 50 = 9.25 54 = 9.5 58 = 9.75 62 = 10 170 000cm³ = 1.5 180 000cm³ = 1 190 000cm³ = 0.5 200 000cm³ = 0	Points for smaller size. Less than: 10 000cm³ = 10 20 000cm³ = 9.5 30 000cm³ = 9 40 000cm³ = 8.5 50 000cm³ = 8 60 000cm³ = 7.5 70 000cm³ = 7 80 000cm³ = 6.5 90 000cm³ = 6 100 000cm³ = 5.5 110 000cm³ = 5 120 000cm³ = 4.5 130 000cm³ = 3.5 140 000cm³ = 3 160 000cm³ = 2 170 000cm³ = 1.5 180 000cm³ = 1 190 000cm³ = 0.5 200 000cm³ = 0	Starting with 10 points but... Over 5.5kgs - 0.5 Over 7kgs - 1 Over 8.5kgs - 1.5 Over 10 kgs - 2 Over 11.5 kgs - 2.5 Over 13kgs - 3 Over 14.5kgs - 3.5 Over 16 kgs - 4 Over 17.5 kgs - 5 If easily pushable then only HALF the deductions. Example: The Kingsport 16s weighs 17.5 kg but only loses 2.5 points because it has a trolley handle so can be pushed	10 = 1 13 = 2 16 = 3 19 = 4 22 = 5 25 = 6 28 = 7 31 = 8 34 = 9 37 = 10 Over 40kmph may be unhelpful or dangerous for such small devices	Smoothness score (see right) then in addition: Single wheel = 2 Wide (over 5 cm) front wheel = 0.75 Wide back wheel (over 5 cm) = 0.25 Tread on front wheel = 0.75 Tread on back wheel = 0.25 Pneumatic front tire = 1.5, rear = 0.75 Honeycomb or foam front tire = 1 rear = 0.5 Hard front wheel - 1 (e.g polyurethane) Hard rear wheel - 0.5 (e.g polyurethane) Flexible deck = 1 Tire size 10cm = 1 20cm = 2 30cm = 3 40cm = 4 50cm = 5	Minus 2 points (-2) for each pneumatic (air filled) tire (may well need replacing) Minus 1 point (-1) for each movable part such as a wheel, lever, hinge point, retractable handle & so on	Stated time or less 30 mins = 10 1 hour = 9 1.5 hours = 8 2 hours = 7 2.5 hours = 6 3 hours = 5 3.5 hours = 4 4 hours = 3 4.5 hours = 2 5 hours = 1 5.5 hours = 0	Stated weight or above 120kg = 10 110kg = 9 100kg = 8 90kg = 7 80 kg = 6 70 kg = 5 60 kg = 4 50 kg = 3 40 kg = 2 30 kg = 1	Front (shining) = 7 Reflective or brake light = 3			

Explanations of achievement scores ⇨

Limitations of this research:

- Specs like speed, range & so on are provided by the sellers & not all have been verified.
- Scoring methods (shown right) may need improving or adjusting.
- Many transport tools not listed.
- Factors not included are build quality, rider comfort, aesthetics, price, max incline, acceleration, stopping distance, electricity cost, width space required on pavement, waterproofing, carbon footprint & customer service of seller. These are either too variable, subjective, hard to measure or there was a lack of information. PLEVS used or owned by author are marked with asterisk(\*). If you see any mistakes or would like to see other PLEVs included please let us know!