Will embedding fundamental movement skills as principles of design increase physical activity levels in children?: Lessons learnt from playground design and housing development

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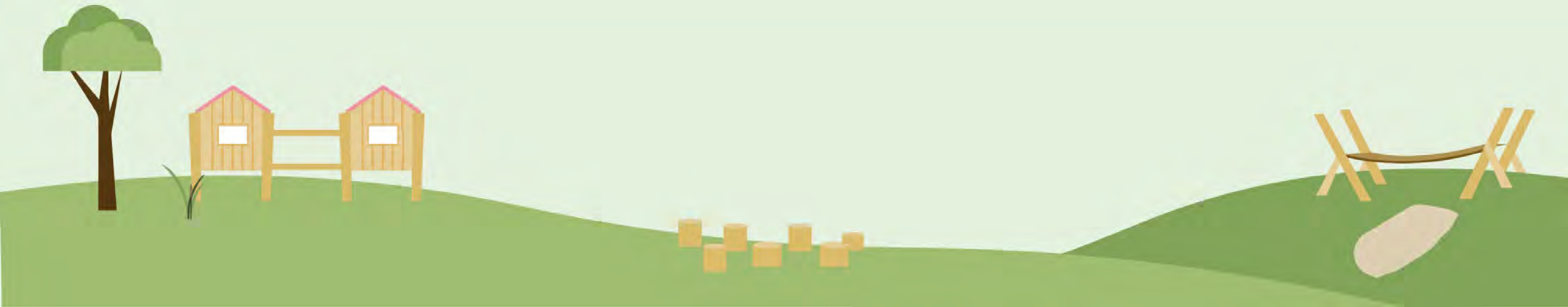
Playgrounds

64%

of UK children visit their local playground at least once a week.

PhD opportunity

Will embedding fundamental movement skills as principles of design increase physical activity levels in children?



My background

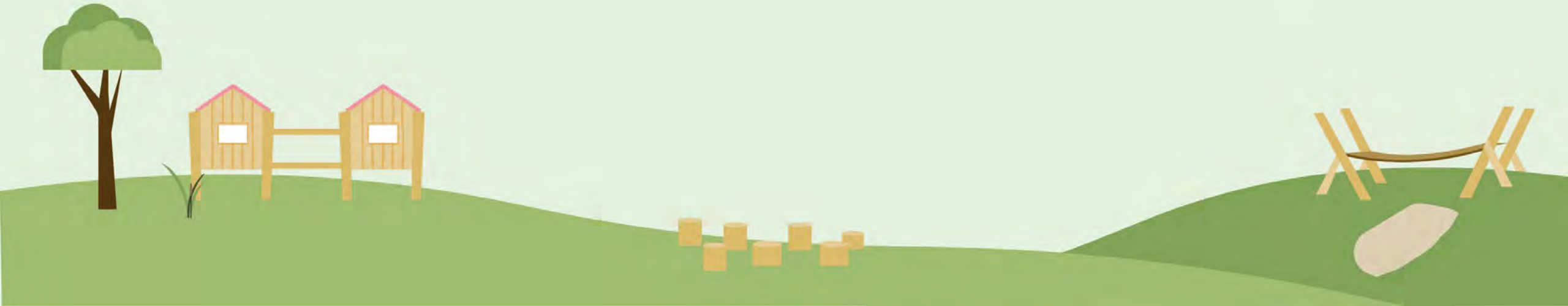
- PE Teacher
- Performance Analysis

The industry partners

Urban&Civic

Jupiter play & leisure

BMD



Study 1

Study 1 - Interviews

322 I: Erm and how do, how do you feel when when Garmin put that
323 steps up?
324
325 P: I feel more challenged, erm, and I do sometimes I like that, it it
326 does give you that bit of well you know you can do it, because it's
327 telling you you can do it so it's almost a false sense of security (ok)
328 you know I've I've done it today so they've put it up, that means I
329 should be able to achieve it 'cause it's only so many more than what I
330 did, the-the previous day, so sometimes it can be, y'know a good
331 thing, other days it can be, I've got y'know I've got no chance and
332 you again that can wear- it can knock you back, erm your confidence
333 and that can be really knocked, but as a whole I do like it it would-
334 again it would probably suit me better if that option, could be in for,
335 erm like restrictive health because I know, if I can do round about
336 6,500 steps a day no I know they could argue that you can set the
337 amount of steps you do each day and and all that, but I want a
338 challenge. (hmm) You know and if you setting a certain amount of

likes the challenge sometimes

external motivation

motivation
feeling ok and able to take risks/push more

achievable goals

increasing goal seems realistic as only little bit more.
added pressure
some days achievable and others not.

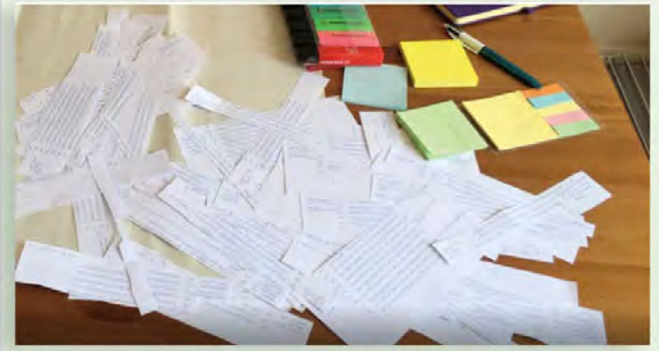
should be achievable

Self-efficacy

self-belief of ability to reach goals

recognition of COPD as a limiting condition

adopting tech to be suitable for COPD.
like its a person who can challenge you

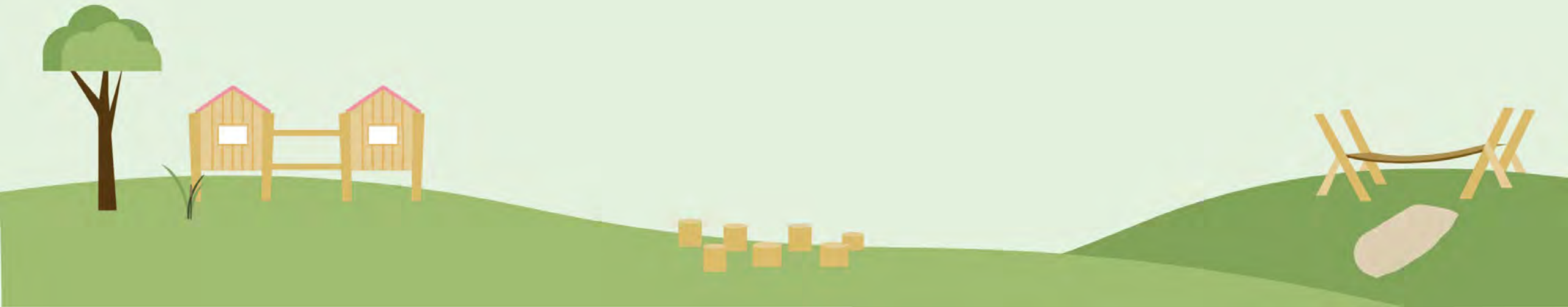


Study 1 - Findings

I managed to find six key things that impact playground design.

These include:

Personal experience of the designers



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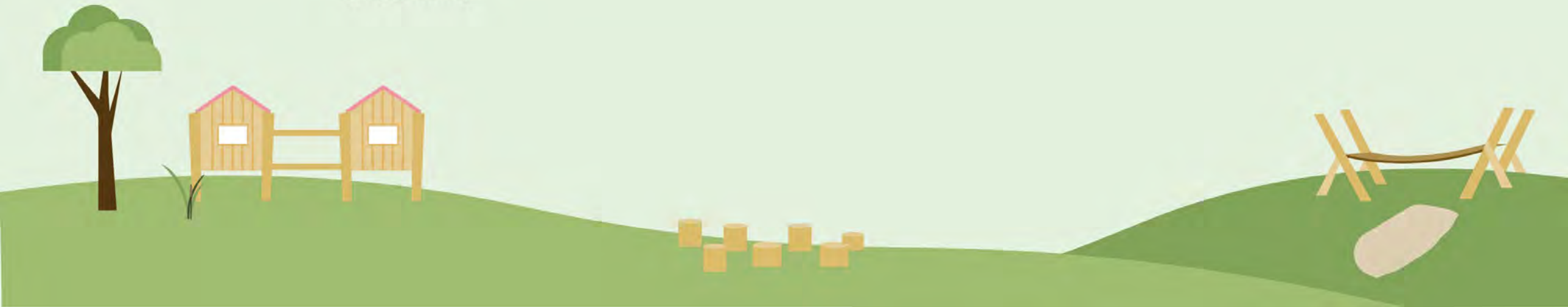

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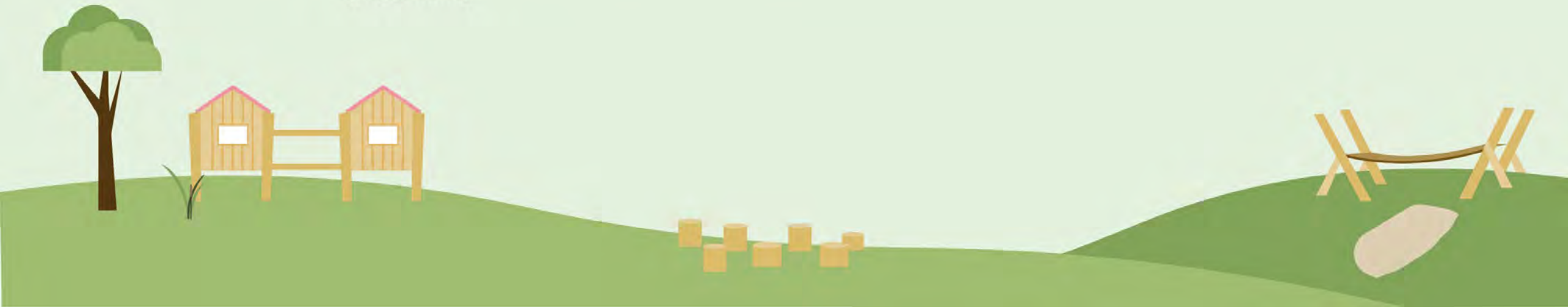

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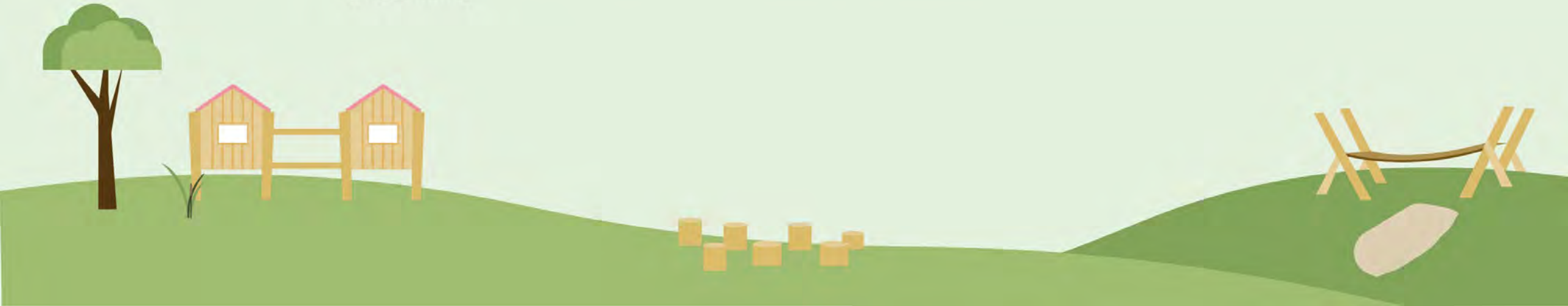

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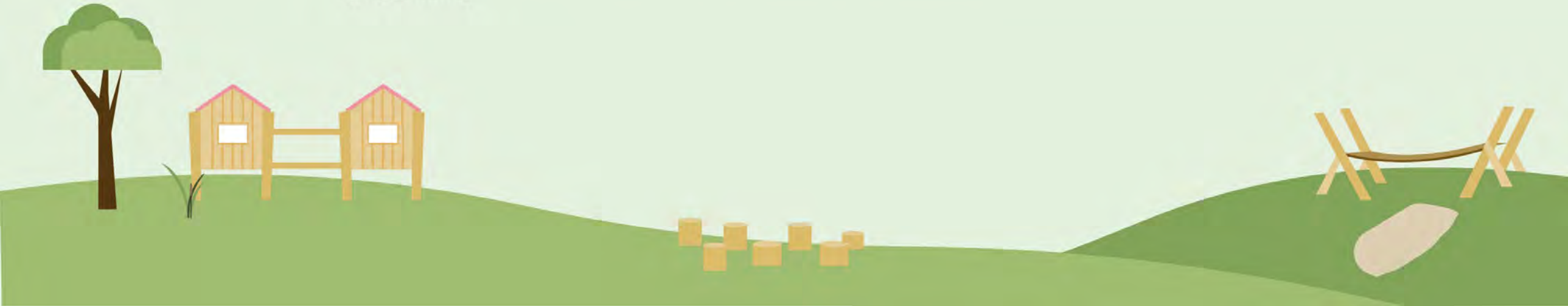

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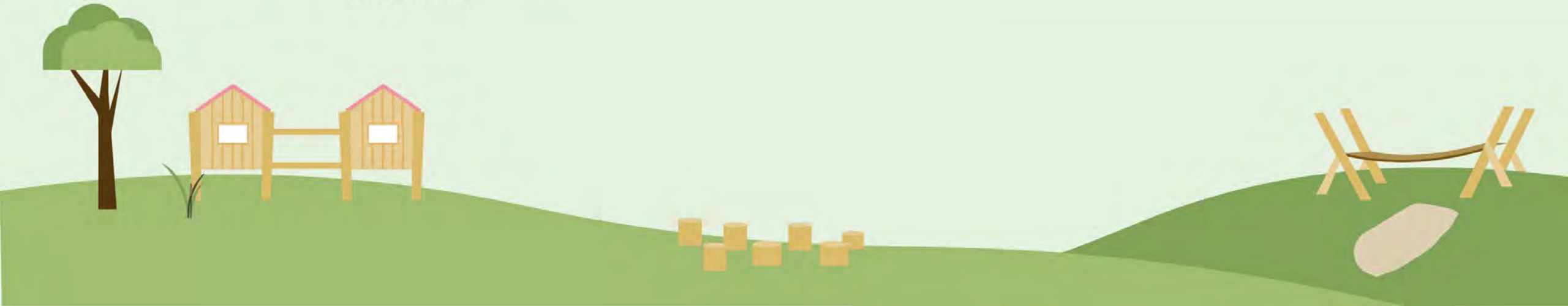
- Cost and maintenance
- Who is using the space and how?
- The impact of aesthetics
- Risk and safety



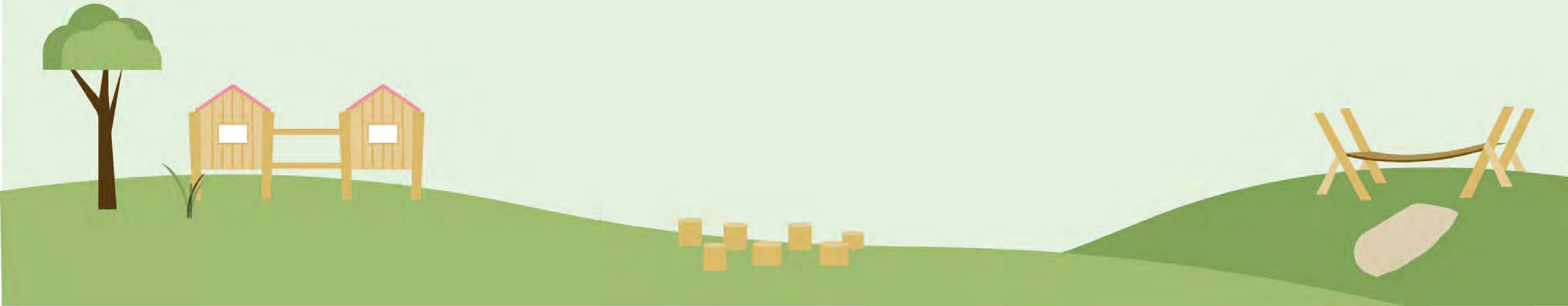
Study 2

Study 2 - Survey

How frequently their child used the equipment

How active their child was on the equipment

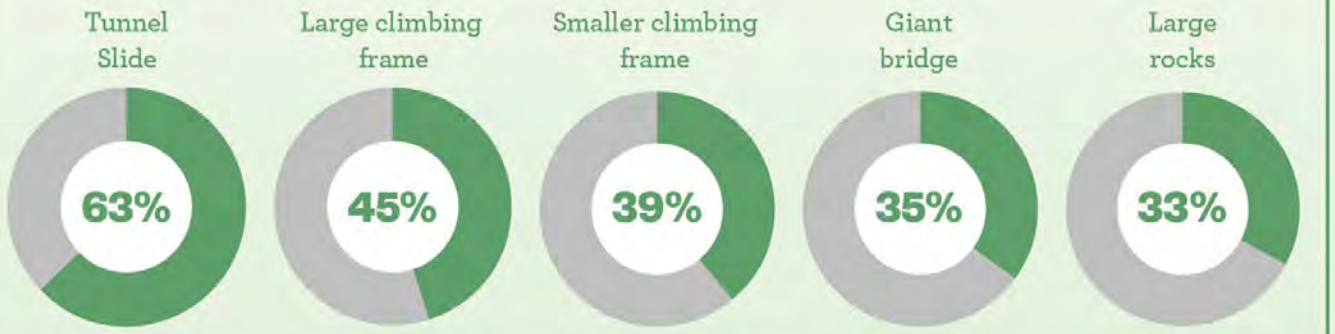
What types of FMS that their child performed there



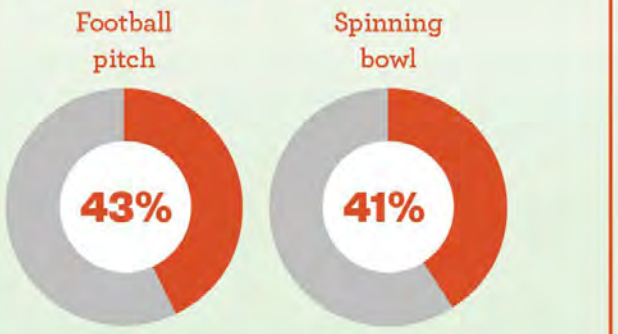
Study 2 - Findings

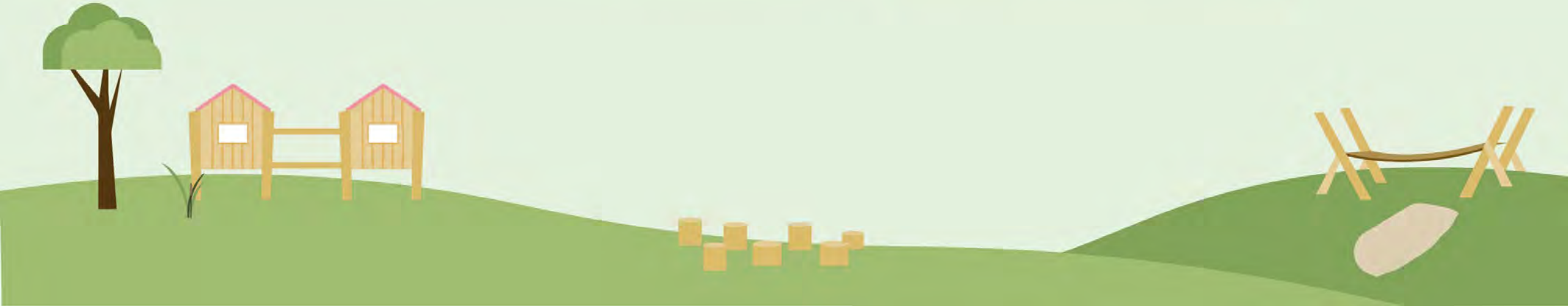
Results to ‘How frequently did your child use XXX piece of equipment’
The answer options were: never, rarely, sometimes, often and always

Most popular



Least popular



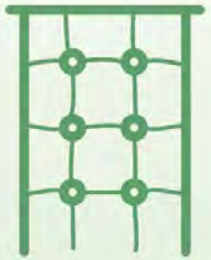


Study 2 - Findings

How active is your child on XXX piece of equipment? Answer options were sedentary activity (e.g. sitting), light activity (e.g. walking), moderate activity (e.g jogging) and vigorous activity (e.g. running).

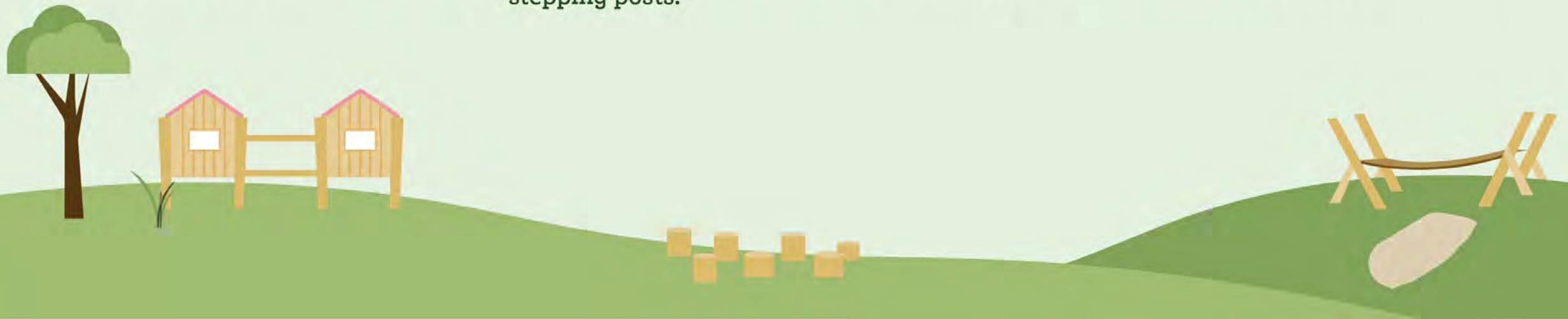
Parents/carers reported that the most sedentary activity was performed on the Sand Tower (22%).

The greatest light activity was reported on the giant seesaw (55%), roundabout, spinning bowl and stepping posts.



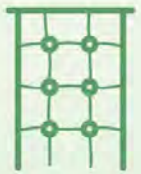
The most moderate intensity activity was on the tunnel slide, and large climbing frame.

The most vigorous activity was on the tunnel slide, large climbing frame and giant bridge.



Study 2 - Findings

The next question we asked was how likely is your child to perform the different FMS on these pieces of equipment.
Answer options were very unlikely, unlikely, likely, very likely, certain.



Highest likelihood for locomotor skills to be performed was large climbing frame and tunnel slide.

The lowest likelihood for locomotor skills to be performed was football pitch, spinning bowl and swings.

Highest for object control skills was large climbing frame and sand tower. But only 10% of parents/ carers ranked this as very likely

Lowest for object control skills was honestly **ALL** of the equipment.

Highest for stability skills was giant seesaw, giant bridge, large climbing frame, stepping posts and tunnel slide.

Lowest for stability skills was football pitch, spinning bowl, picnic area and tunnel slide.

Study 3

14

only 14 studies that have investigated playgrounds and FMS globally.

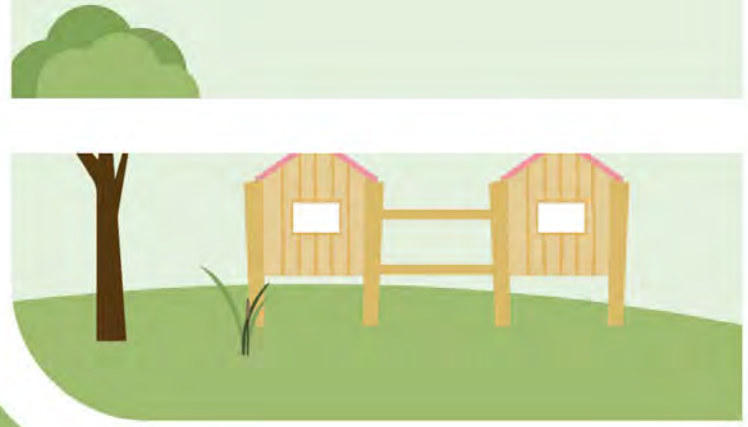
Study 3

4

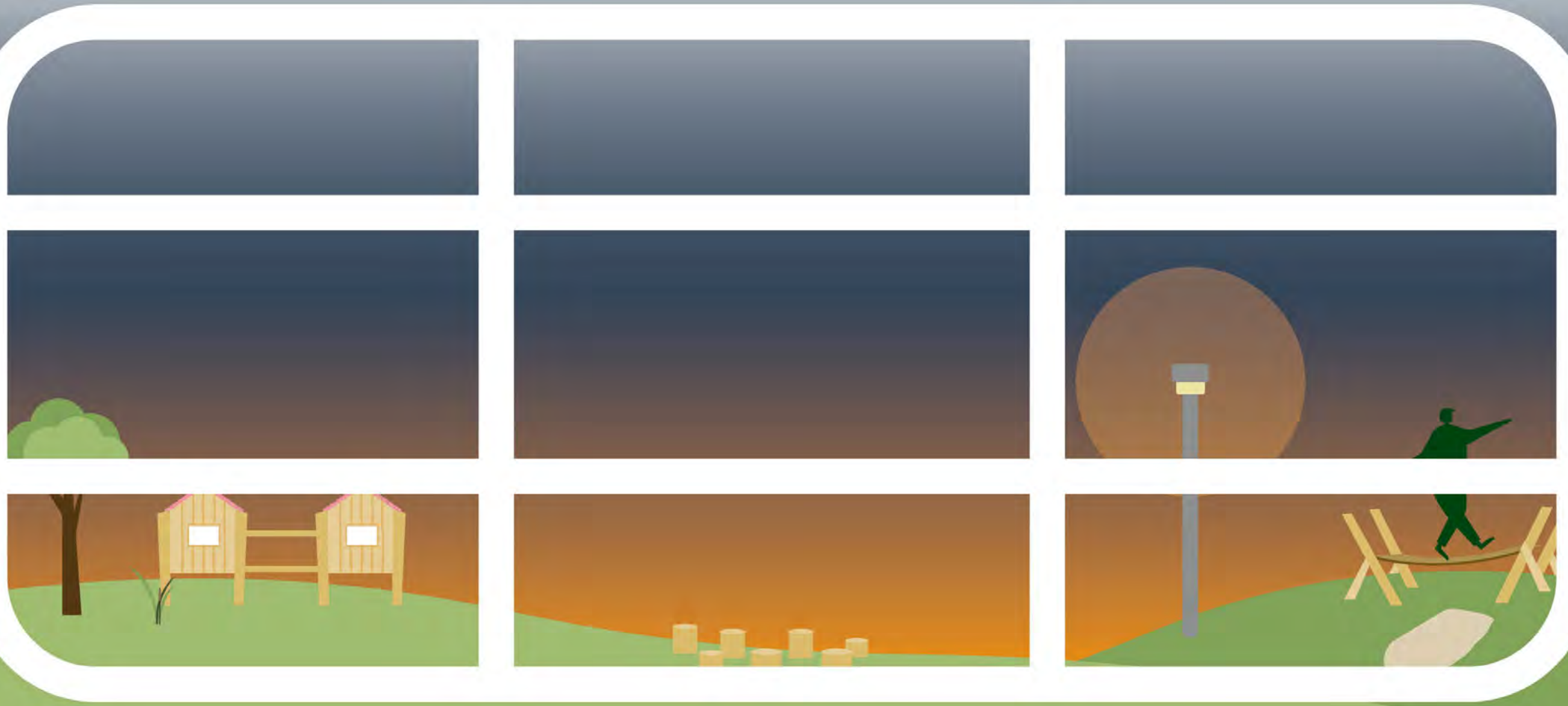
of those 14 only 4 investigated public playgrounds

Study 3 - Methods

Study 3 Direct observations



Study 3 Direct observations



Cameras

Playful Places
Designing for Movement
Study 3

Urban&Civic

Coventry University

SPORT ENGLAND

BMD

Jupiter play&leisure

The playground comparison

Houlton

Hillmorton

Cawston

The playground comparison

Houlton

Hillmorton

Cawston

Study 3 - Living Lab

3-Day Holiday Club Format

Coach travel to playgrounds

Multi-sports and community activities programme

Baseline measurements on kids' capability

Partnered with U&C communities team

Survey and feedback from parents

Study 3 - data

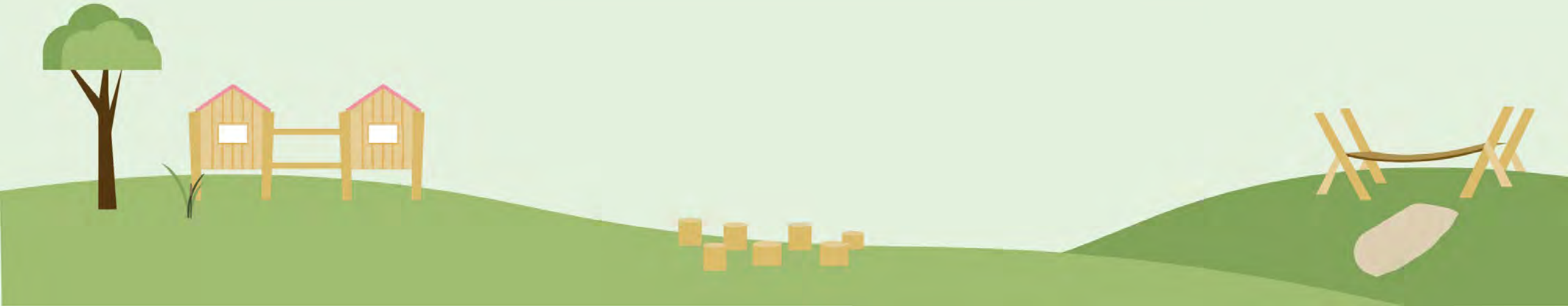
60 minutes of footage

8 camera's

30 children

3 playgrounds

720 hours of total footage



Study 3 - data

Climbing / Hanging

Jump /skip

Lying down

Push / pull

Rough & tumble

Run

Sand play

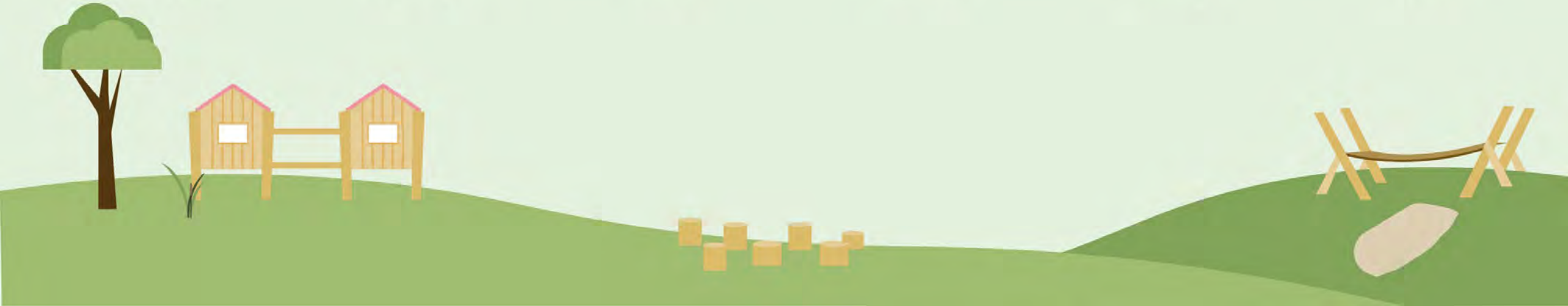
Sit / squat

Slide

Stand

Swing

Walk



Study 3 - Results - Equipment dwell time

Climbing equipment was the most popular type of equipment, then swing equipment, sand equipment, seated equipment, transitioning, activity trail equipment.

Males spent the most time on sand equipment

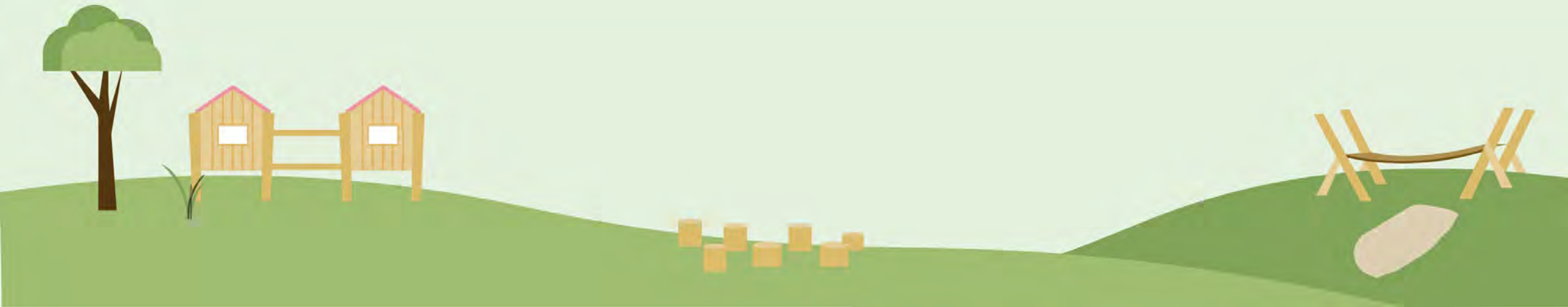
Females spent the most time on climbing equipment.

Study 3 - Results - FMS type

For all three playgrounds the most frequently performed type of activity was standing, then walking, sitting/ squatting then climbing/hanging.

Least frequently performed were movements like crawling.

There are no instances of object control skill



Study 3 - Results - Comparing FMS on the different playgrounds

Activity type	Houlton			Hillmorton			Cawston		
	Whole sample (average seconds)	Males (average seconds)	Females (average seconds)	Whole sample (average seconds)	Males (average seconds)	Females (average seconds)	Whole sample (average seconds)	Males (average seconds)	Females (average seconds)
Climbing hanging	160.55	135.60	173.68	116.89	114.56	108.18	264.50	262.30	236.63
Jump / skip	17.67	15.30	19.06	13.26	24.50	9.24	20.39	25.67	17.00
Lie down	17.09	23.00	10.00	88.00	50.20	182.50	50.00	39.33	54.57
Pull / push	95.05	149.86	67.64	81.19	86.50	78.50	187.29	347.67	99.82
Rough and tuble	23.45	22.14	25.75	27.67	61.00	11.00	91.17	73.25	127.00
Run	74.41	378.40	73.84	65.36	98.13	53.06	120.77	142.50	107.19
Sand play	200.52	378.40	101.67	140.00	242.57	56.56	439.63	576.67	376.38
Sit / squat	197.79	178.00	208.21	217.35	156.00	256.61	254.96	185.70	298.25
Slide	18.14	22.86	15.93	12.91	9.57	13.93	27.08	11.60	36.75
Stand	348.38	436.90	301.79	400.04	409.33	407.22	386.04	345.60	411.31
Swing	298.10	272.80	306.53	73.80	132.50	34.67	190.71	137.33	198.81
Walk	261.28	244.00	270.37	255.04	213.00	274.50	288.88	229.30	326.13

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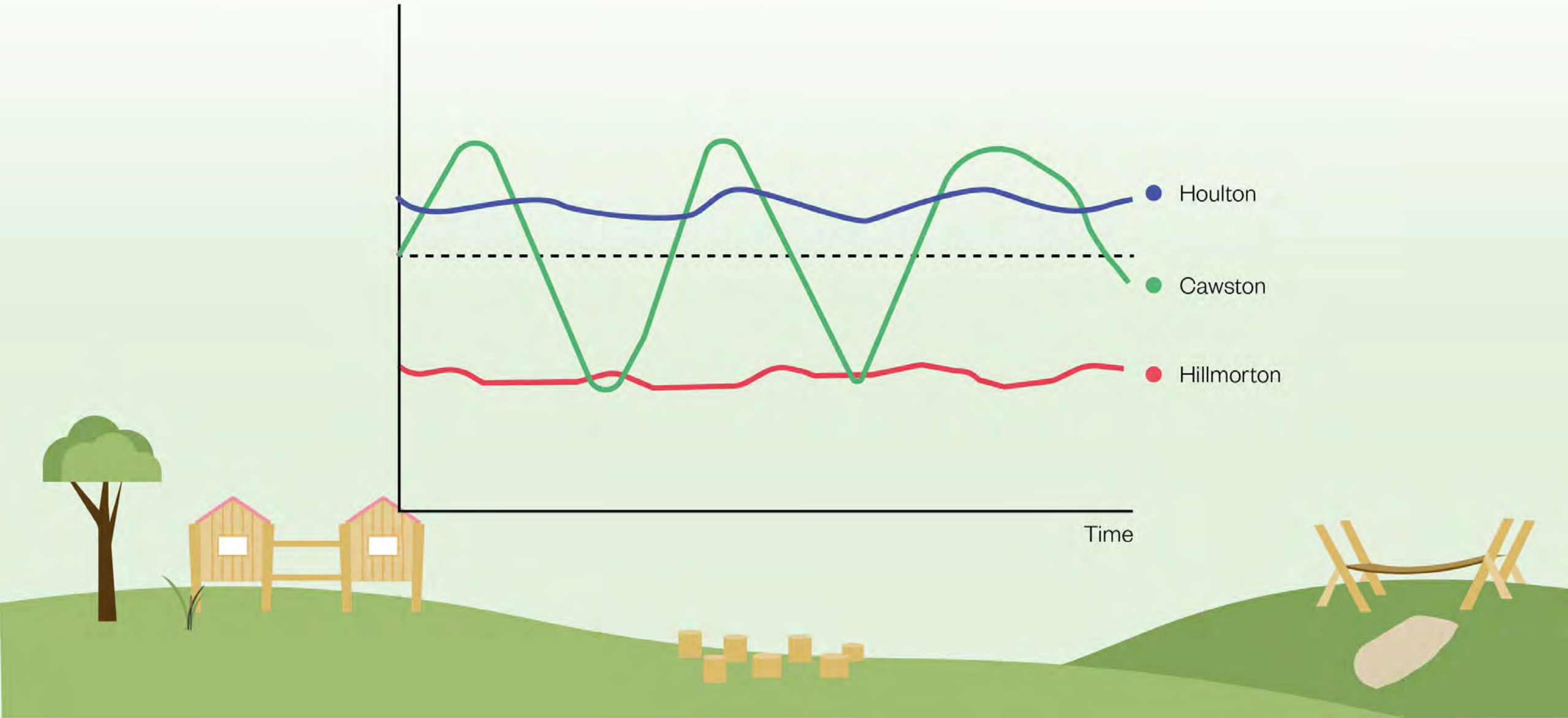

Conclusions

- The role of personal insight/lived experience and professional application are heavily connected. Play commissioners and designers hold the key to change.
- Larger pieces of equipment provide more opportunity for play, socialisation and performance of FMS. Budget prioritisation may need to reflect this. Less is more!
- Equipment spread over a large, flat surface struggled to maintain activity levels and engagement (link to spikes on graph) – again less might be more or the way in which space is designed in...
- Transitioning spaces are key to maintaining high levels of physical activity between play equipment. Landscaping, natural features and undulation maintains energy levels (link to Houlton line on graph)
- Play parks needs to incorporate more for object control. There is little on offer and this may be linked to equipment needs and maintenance costs
- Maintenance is key – broken or poorly kept equipment provide little or no FMS value, or fun. Cheaper, smaller equipment hold less FMS or transitional value
- Gender splits on equipment present interesting trends for the sector – I saw definite gravitation towards different types of play for girls and boys

Thank you

Questions?

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