



# The parkour park design handbook

*Colin MacDonald*

# Author's note

The growing popularity of parkour has led to an increasing number of projects that incorporate parkour areas into parks and other public spaces. At the same time, the sport's novelty and the relative lack of precedents (at least in North America) are a source of confusion about what public, outdoor parkour facilities actually look like and how they function.

I have been designing facilities for parkour professionally since 2014 and have completed indoor and outdoor projects across the US and Canada. There will never be one "right" way to design for parkour, but this handbook is my attempt to briefly outline how I approach parkour design. Whether you are a landscape architect trying to situate a parkour park on your site plan, a parkour athlete helping out with a concept for your local community center, or a city planner considering a parkour park for your next capital project, I hope this handbook can help!

This handbook covers permanent, outdoor facilities and is written for North America, where, at the time of writing, there is no set of standards governing parkour parks. The UK and EU both have their own standards for parkour parks which should obviously be consulted when designing for those markets. Similarly, **nothing written in this handbook replaces the need for having drawings checked by a structural engineer and ensuring that designs comply with local regulations.**

Best of luck,  
Colin MacDonald

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# What is Parkour?



*Photo by Emanuel Kinoke*

**Parkour** is an athletic activity centered on creating movement challenges in the built environment using a shared vocabulary of acrobatic techniques. Created by a group of French teenagers in the 1980's, parkour is now a global sport with a ubiquitous presence in social media and popular culture. People doing parkour are called traceurs, freerunners, or simply parkour athletes.

While parkour shares characteristics and even movements with gymnastics, breakdancing, and rock climbing (bouldering), its closest relatives are street-style skateboarding and inline skating. Like skating, parkour exists as a reaction to and re-interpretation of urban environments and structures. Parkour is done at a “spot” which might be as small as a pair of hand-railings, but not so big that freerunners can't keep an eye on their backpack.



*Photo by Nadine Shaabana*



Good parkour spots and good skate spots both feature a mix of the familiar and the unexpected - structures that invite the comfortable practicing of standard movements combined in interesting ways with enough unique flair to make the spot feel distinct and worth revisiting.

### *Why build parkour parks?*

As with skateparks and climbing walls, parkour parks are a bit of a contradiction for a sport born from appropriating space. Parkour parks are not a replacement for “wild” parkour spots, and many athletes train on both. Purpose-built parkour areas offer:



An accessible and inviting place to learn, especially for beginners



A community hub and meeting place



A higher density of challenges than typically exists at wild spots



Structures that are difficult or impossible to find in the wild

# Safety



(These standards are adapted from the US Parkour Association's guidelines which I co-authored.)

Regardless of where it is practiced, parkour will always hold an inherent risk of injury. The design of a parkour park cannot remove this risk, but it can take steps to make risks clear and mitigate the consequences of failure. All spaces intended for parkour should seek to be:



## Structurally sound

Use materials of sufficient strength at appropriate spans, thicknesses, and depths. Peak loads can be quite high, err on the side of over-building. Provide a ground surface appropriate to the structures above it.



## Visually legible

Keep sight-lines open through the space when possible. Consider running paths to avoid collisions between users. Provide signage and other graphical elements to make intended usage clear to visitors.



## Free of latent hazards

Treat all surfaces as touch-surfaces and avoid structures and materials that cut, pinch, or hurt when grasped. Inspect the space regularly for damage with a particular eye towards structures moving unexpectedly.



Conspicuous signage that explicitly designates a space for parkour use helps inform users and protect land owners. At a minimum, the main sign should say:

- This is not a playground [unless it meets those standards]
- Parkour can be dangerous, use at your own risk
- Check surfaces for grip before you jump or swing



Danish sign ("Use at own risk" etc.)



## cat leap

- Land on the faces of vertical walls -

- Start with a **cat hang**. Grab the top of the wall with both hands and walk your feet up the wall until they are around the height of your hips. Keep your arms straight, your core engaged, and your ankles active.
- Next, try jumping into a cat. Your feet should hit the wall **BEFORE** your hands grab the top. Active ankles!
- If you can, perform a cat leap and then climb up and over the wall into a cat hang on the other side.

*You can land in a cat on MANY elements in this park. For a challenge, try cat leaping to some vertical posts without grabbing the top.*



For a video tutorial of this movement, scan this QR code or enter the URL

Educational signage

# Visualizing parkour



The challenges that make up parkour tend to be fast and explosive - think sprint, not marathon (or even a full lap around the track). Individual movements like a running jump from one wall to another are attempted and repeated in isolation or combined into "lines". Athletes care about fluid, seamless connections between movements and rarely build lines that involve more than 3-4 steps between each move. The process of building, refining, and repeating these challenges and lines IS parkour.



*Speed and efficiency*



*Creativity and problem-solving*



*Failure and adaptation*



Parkour consists of **four primary movement types**. These categories are broad, fluid, and certainly non-exhaustive, but they are helpful tools for considering how various structures enable or exclude different aspects of parkour.



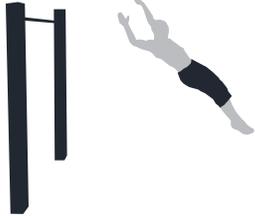
**Jumping** is mostly done between structures and can start from standing, from a run, or from another jump or movement. Structures of all heights and dimensions can be jumped from or to, but significant distances (beyond

two body lengths), and heights (over the head) will restrict their use to advanced athletes. "Sticking" a precise landing is a common challenge with jumps.



**Vaulting** is mostly done over structures and involves dynamically shifting one's weight from the legs to the arms and back. Structures between knee and chest height are the most inviting to vault.

More experienced athletes often look for opportunities to use vaults like jumps, vaulting a structure and clearing a gap to land on another structure.



**Swinging and climbing** are done hanging from structures by one's hands. To support climbing and swinging, structures must be high enough that an athlete can lift their feet above the ground and have an edge that can be gripped

comfortably. For swinging, this mostly means a round bar thin enough to wrap one's fingers around. In contrast with rock climbing in which challenges often feature tests of grip strength and static movements, parkour climbing is mainly a dynamic affair that prefers "easy" holds that invite big, powerful movements.



**Acrobatics** is the broadest category and the hardest to define, but most acrobatic movements involve an element of rotation and/or inversion of the body. As athletes learn an acrobatic movement, they usually want a structure to perform it off of (like flipping off of a platform) and an open, soft surface to land on.

More advanced athletes can incorporate multiple acrobatic movements into a line and land on or near other structures. Simpler, less cluttered environments are better for acrobatics.

# Location



As with any recreation project, choosing the site for a parkour park is less about following hard-and-fast rules than it is about asking the right questions.



## Is there an active parkour community in the area?

A small parkour park could augment an existing hotspot while a larger park might fill a need for parkour spots in a certain area that lacks existing training locations.



## Can this parkour park fit with other active-rec. facilities?

Multi-sport parks that combine skate, parkour, climbing, bike, and other sports are a good way to combine overlapping user groups and share costs.



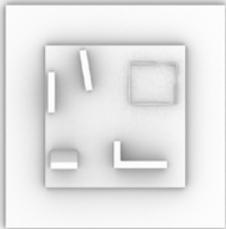
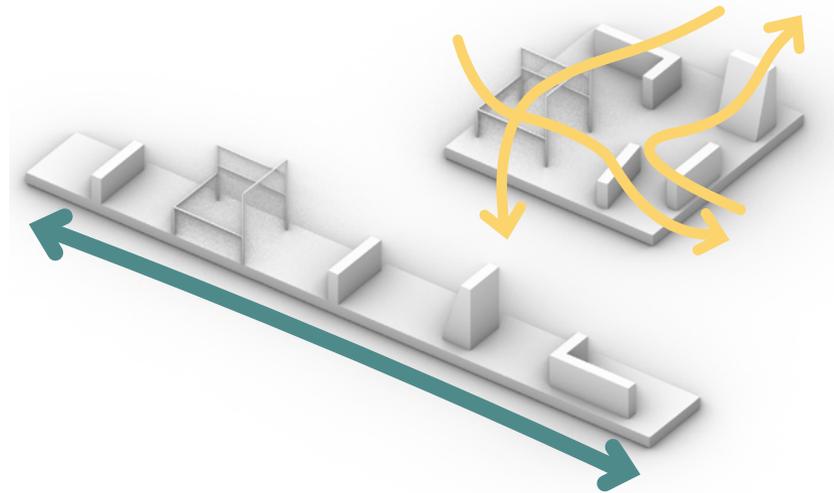
## Could existing structures be used or added to?

Old foundation walls can be repaired and augmented with bars to reduce waste and lend a post-industrial aesthetic. Retaining walls can anchor bar structures and overpasses or bridges can offer shade and shelter from rain.



# Shape

Narrow, linear plans are inefficient for parkour use and lead to parks that are literally one-dimensional. Both pads pictured here are the same area, but one is square while the other is quite skinny. The linear plan presents few options to create lines beyond the obvious obstacle course approach. The same structures arranged in a wider plan afford many more possibilities.



Parkour areas typically include a buffer between the edge of the structures and the end of the fall surfacing (6' is common). When the pads above are offset 6', the full area is 1088 sqft for the square pad and 1425 sqft for the rectangle. With a buffer included, a square plan is substantially more efficient per square foot of surfacing.



# Scale

Parkour is an individual sport that is commonly practiced socially in small groups. 2-6 athletes can comfortably share the same set of structures, resting and watching while others take an attempt. 15-20 athletes on a moderately sized spot will feel busy but not crowded, and larger gatherings or “jams” are popular seasonal events within active communities.



*Photo by Andy Day*



*Gerlev - DEN*

Parkour spots are social spaces as well as athletic facilities. Users want to hang out near the action, so shade, water, informal seating, and plantings should be brought close to the parkour area or even incorporated within it.

Consider where parents, friends, or freerunners taking a rest might sit and watch the action while staying clear of active running paths.



Parkour parks do not have a hard minimum or maximum size, but size ranges help to set design priorities and consider how many users a park will attract and support.



Strandlodsvej - DEN

**Under 500sf:** The smallest parkour parks are equivalent to fitness stations and frequently double as such. Pipe structures offer the most versatility while taking up a minimal amount of the limited footprint. This size can support a handful of concurrent users at most.



GAME Viborg - DEN

**500-1500sf:** In this range, 2-3 small groups may use the park simultaneously with cooperation. There is enough space for a variety of structure types, although space is still tight. A well designed park of this size can support a teaching program.



Cordata - USA

**1500-4000sf:** As parks get larger, space for multiple movement-themed zones becomes available which helps with organization, flow, and replay value. Parks of this scale are likely to be regional draws and good locations for larger gatherings.



BGI Akademiet - DEN

**4000-10,000+sf:** The largest parks demand to be subdivided into multiple spots. Consider how the plan might be physically broken up with grade changes or interior paths. Very large parks without visual separation run the risk of feeling overwhelming.

# Basic structures



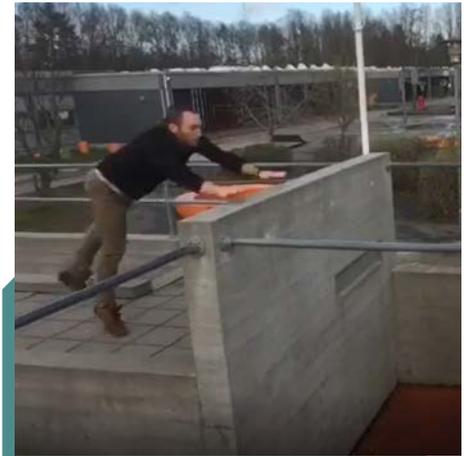
Most parkour parks have three categories of structures: **bars**, **walls** (including beams) and **platforms** (including the ground plane). Their relative heights help determine what movements are inviting or possible on them.



*A steel bar structure (AKA "scaff")*



*Mixed-height concrete walls*

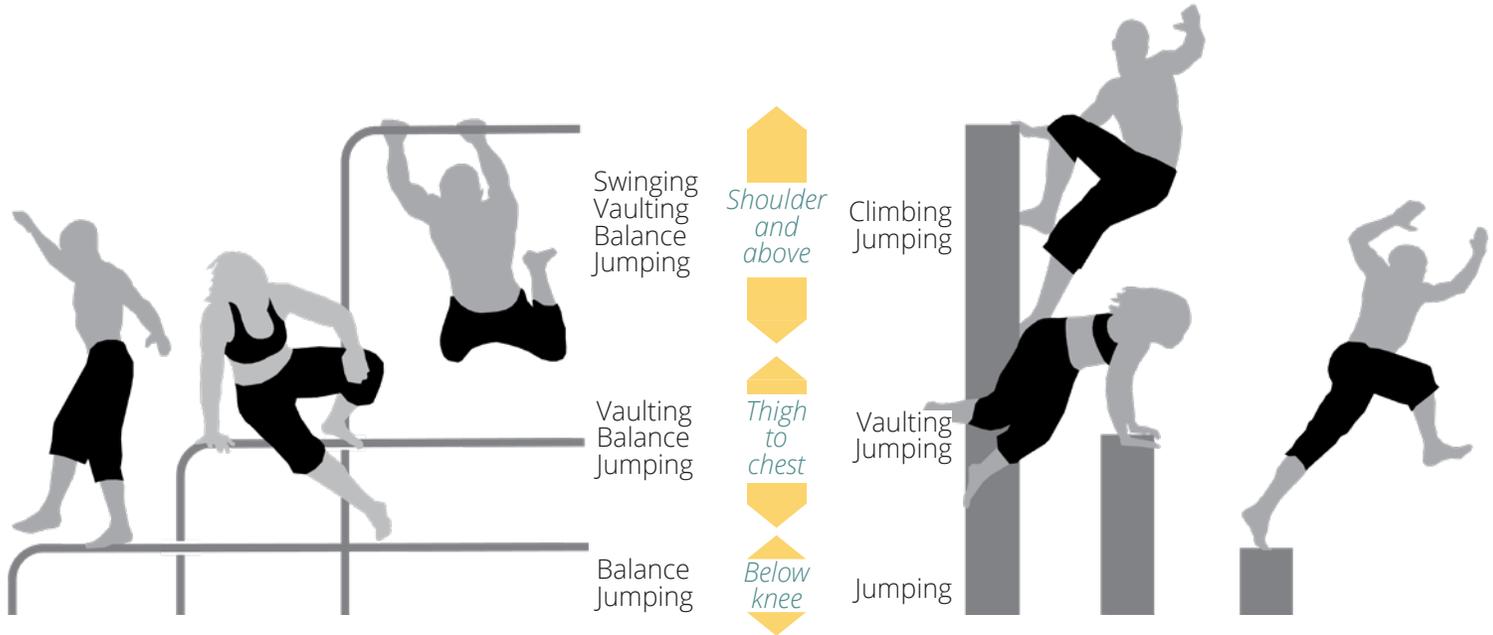


*A platform elevates the ground plane*

Unique or sculptural structures are also a welcome addition to parkour parks. Deploy these elements sparingly and juxtapose them with more standard forms to create pockets of novelty.



## Quick guide: movements & heights



Jumping and balancing become quite scary for most users on bars above head height.

High bars make good central elements because they offer lots of connections without obstructing running paths.

Orient higher walls to preserve visibility into the space and sight-lines across the park.

# Thinking in edges



Since freerunners jump, vault, swing, and climb on the edges of structures, we can use those edges in plan view to think about the relationship between structures.

**Parallel edges** create a gap of negative space that invites connection with dynamic movements. The size of the gap, the type of structures on either side, and their sectional relationship to each other shapes the range of movements possible between them. The dominant parallel edges define the primary challenges of a spot, and some of the world's most famous and popular "wild" parkour spots are little more than a fortuitously arranged collection of parallel walls.



Vuggestuen Kongehuset - DEN

**Perpendicular edges** create opportunities for direction change and help a parkour spot support longer, more complex lines. The relationship between perpendicular edges tends to be a secondary concern compared to the parallel edges.



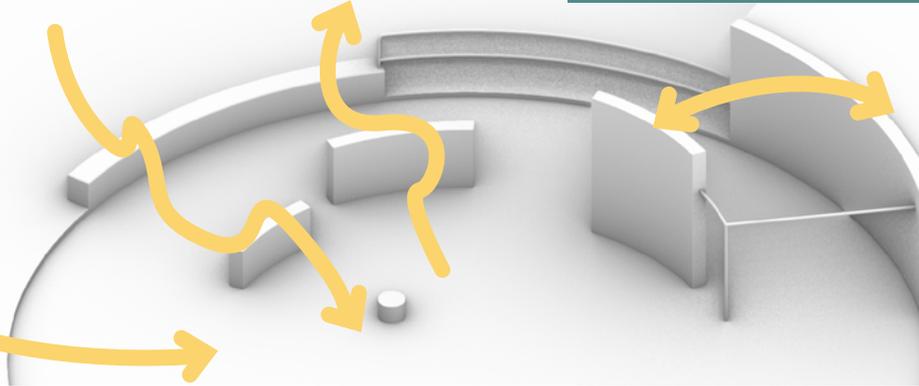
# Active borders

Minimal edges allow the buffer to be used as a running approach for speed.

Seat-walls and low barriers offer the most linkage in and out

Higher walls mostly for climbing and jumps

They also make good anchors for high bars



The first edge in a parkour park is the border between the park and the adjoining space. Designs should consider how the border condition relates to the equipment within the space and position elements appropriately to maximize paths in and out of the space.



*Open approach for a powerful vault*



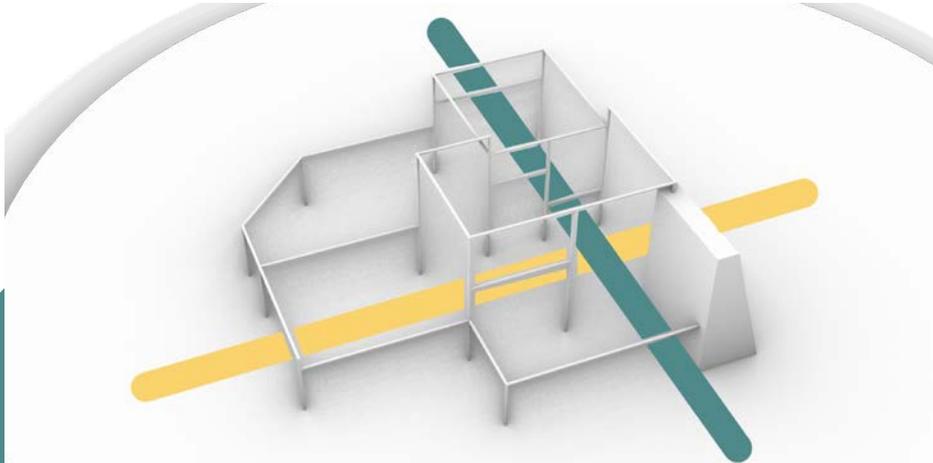
*A low, active border*

# Balancing density



A dense arrangement of structures will usually offer more potential for parkour than those same structures spread out, since a higher density of structures allows more parallel edges to be in range for fluid linkage through movement.

The trade-off is that just as structures create potential for new movements they also block the opportunities for other ones. This is especially true of dynamic movements that require a running approach and acrobatic movements that need clear landing space. Both needs can be addressed by varying the density of edges throughout the park as well as by thinking carefully about which structures will benefit from some clear space.



Here the blue axis is quite dense with parallel edges while the yellow axis is left relatively clear to allow for full swings and open landings. This strategy allows the same structures to support different movement types without obstructing each other.

*Density along axes*

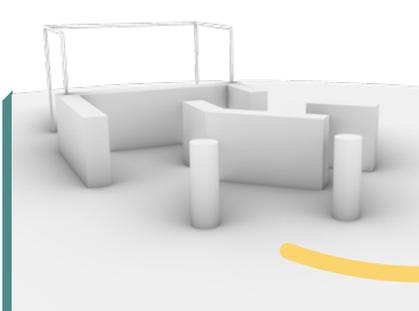


# Balancing variety

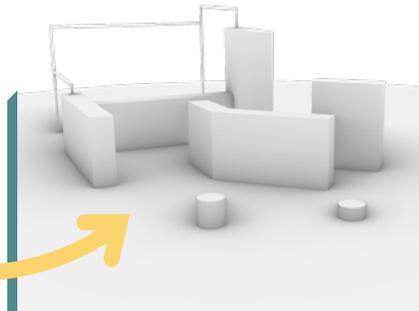


Odense Harbor - DEN

Variety in parkour parks can come through form, material, and scale. The best way to increase variety is simply to integrate structure types. An area dominated by bars will likely benefit from the addition of a wall and vice versa.



Only two heights (walls and bars)



Significant improvement

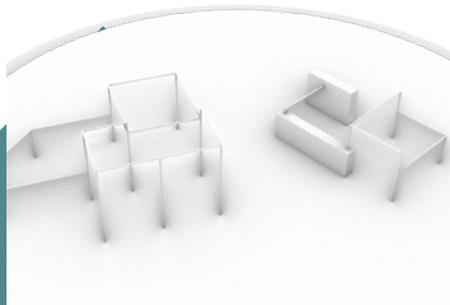
Varying distance and height creates more potential challenges and helps users find opportunities to progress from smaller, lower movements to larger, higher versions.

Beware excessive or thoughtless variation. Too much variety creates visually chaotic spaces that feel cluttered, unintentional, or overwhelming.

# Escaping the 90° grid

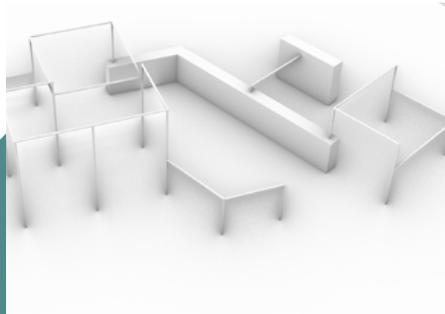


The importance of parallel edges encourages grid-based plans. This is not inherently something to avoid, but when repeated across an entire park the effect is thematically repetitious and visually dull. These three interventions can help freshen up grid-based layouts.



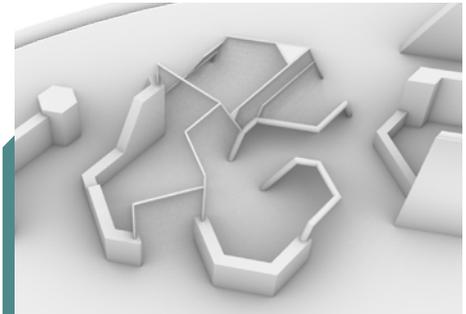
*Offset grid*

Here the two dominant 90 degree axes are preserved while a break allows the grid to change shape without an awkward intersection.



*Intersecting grid*

Similarly, two separate grids can be connected with a joint. The break creates unique movement connections without too much chaos.



*Curves & polygons*

Either as one-off elements or a repeated pattern, circular forms and polygons (especially hexagons) can still produce strong parallel edges while offering a novel site plan.

These approaches work well in combination. For example, a hexagonal wall form could act as the “joint” between two 90 degree bar structures offset from each other by 30 or 60 degrees.



# Angles in plan & section



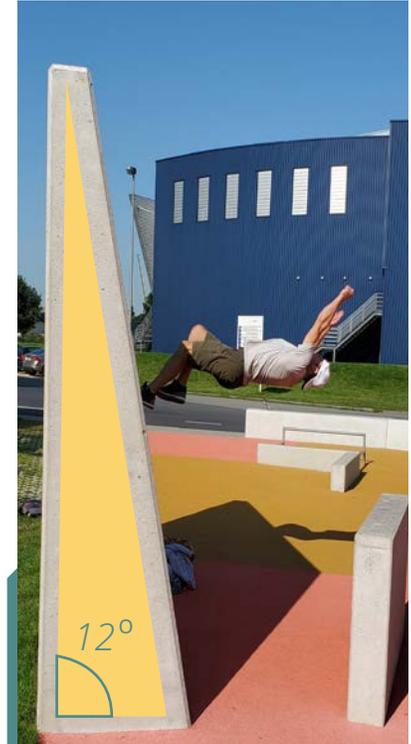
Gerlev, DEN

A slight angle between two edges creates a smooth gradient of difficulty, encouraging progressively larger jumps. The same is true in plan. 5-10 degrees of difference is ideal - enough to be meaningful but not distracting.

Angled surfaces between 45 and 80 degrees invite athletes to redirect their momentum with angled jumps, scale to higher walls and levels more dynamically, and perform acrobatics that are harder or impossible on 90 degree walls. These surfaces can be large, dominant features or small details that add movement options without taking up more space.



Angled wall corners



Learning to wall-flip

# Bar Structures



Bar structures enable a wide variety of movements, are relatively inexpensive to construct, and leave sight lines open across the park. Pipe should be made from a quality steel and protected against corrosion with galvanization, paint, or powder coating. Welded connections are best for permanent parks, although structural pipe fittings are sometimes used to save cost.

Bar structures are vulnerable to permanent deflection from excessively long horizontal spans and/or insufficient wall-thickness. Pipe can be structurally sound while still being unpleasantly flexible for parkour use. Three strategies to reduce shaking:



*Mixed diameters*

Here a wider bar is tapered down to swinging height to add rigidity while preserving grip where it matters.



*Diagonals*

Diagonal bars dramatically improve rigidity while also adding another swinging surface. Use sparingly.



*Adjacent supports*

Connect horizontal bars to adjacent rigid structures like walls.



## Quick guide: pipe thickness



Adult hand on 1" pipe

Thin pipe (1" preferred) is the easiest to grip, especially for small hands. Its thinness makes it less comfortable for vaulting and jumping, as well as limiting the size of spans. It is most often used for pull-up bars or child-specific equipment. Common in calisthenics parks.



Adult hand on 1.6" pipe

Medium pipe (1.6" preferred) supports the widest movement range comfortably. It can be gripped by most people for swinging without being too thin to stand on. Spans are still limited, and structures with few members will be quite shaky if more rigid materials are not incorporated.



Adult hand on 6" pipe

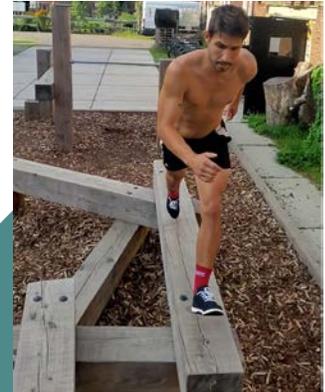
Thick pipe (3-6") is too large for many swinging movements. Its diameter makes it appealing for jumping and vaulting and can add significant rigidity to structures. At 5" or larger, pipe begins to act more like a wall-top while adding visual interest and movement variety.

# Wall structures



A wall's width helps determine how comfortable it is to vault and jump on. If an adult can fit their entire hand or entire foot on the top of a wall it will feel more secure to vault or jump respectively.

Wider walls also have the advantage of doubling as running surfaces along their span, potentially acting like platforms to open up new jumps. Walls that are very wide (over 14") may actually be more challenging to vault, especially for beginners.



*Running on a 12" wall*



*A comfortable chamfer*



*Too rough and uneven*

Wall edges and corners should be eased, especially on the top surface. Chamfer and roundover profiles both work, but they should be tight (less than  $\frac{1}{2}$ " radius) if the wall is high enough that athletes will interact with the wall as a climbing surface.

Avoid materials like protruding stones, especially on the tops of walls.



Many movements involve using grippy shoes to interact with a wall's vertical face, which makes the texture and material critical.

Polished concrete surfaces are obviously too slick, but large exposed aggregate should also be avoided both for poor grip performance and discomfort on the hands. Aim for a medium smoothness akin to 80 grit sandpaper. Even with a good texture, concrete surfaces can release dust that ruins their grip. If possible, test a concrete sample for its grip before the project is poured.

For the best performance apply a clear grip coat such as Deck-o-grip. These products are often used on concrete walking surfaces around pools and give durable, all-weather grip performance without a sharp texture that can tear up the hands.



*Flipping off a rough-textured brick wall*



*A good texture: matte & slightly rough*



*Avoid large, exposed aggregate*

# Beams and timbers



Elevated beams share some of the characteristics of thick pipe in that they function mostly as vaulting and jumping structures. When substituted for walls they save on materials and add visibility and visual lightness to a park.

Beams are best used in lower applications since they do not support most climbing movements. The lack of a vertical surface also makes them more intimidating to jump to than a similarly sized wall. Edge profiling is similar to walls.



Penzer Park - CAN



Centennial Park - CAN



Centennial Park - CAN



# Ground surface

An ideal parkour surface is firm enough to run on and jump off of but soft enough to help prevent injury from the inevitable falls. Structures and surface should work together, e.g. pairing a high bar-heavy design with a softer landing surface.



**Poured-in-place rubber** offers the best all-around balance for parkour and also has the advantage of drying quickly. It is also very expensive and less impact absorbent than some options.



**Sand** is very soft for landing, but the grains get on top of jumping surfaces where they act like ball-bearings and make landing slippery and dangerous. It is also very difficult to run and jump on.



**Engineered Wood Fiber** is harder to run on than PIP. It can hurt to fall on or go barefoot on and stay wet longer, but it is economical and provides a softer landing for acrobatics.



**Grass** mainly suffers from insufficient durability in places where people will frequently be running and jumping. Rubber grass-mat products may help.



**Loose rubber mulch** has better drainage properties than EWF and feels better on bare feet, but it may be even harder to run on.



**Concrete** or other hard pavers are best used when structures are below head height.

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