

= Bouldering =

Bouldering is a form of rock climbing that is performed without the use of ropes or harnesses . While it can be done without any equipment whatsoever , most climbers use climbing shoes to help secure footholds , chalk to keep their hands dry , and bouldering mats to prevent injuries from falls . Unlike free solo climbing , which is also performed without ropes , bouldering problems ( the path that a climber takes in order to complete the climb ) are usually less than 6 meters ( 20 ft . ) tall . Artificial climbing walls allow boulderers to train indoors in areas without natural boulders . Bouldering competitions , which employ a variety of formats , take place in both indoor and outdoor settings .

The sport originated as a method of training for roped climbs and mountaineering . Bouldering enabled climbers to practice specific moves at a safe distance from the ground . Additionally , the sport served to build stamina and increase finger strength . Throughout the 1900s , bouldering evolved into a separate discipline . Individual problems are assigned ratings based on their difficulty . There have been many different rating systems used throughout the history of the sport , but modern problems usually use either the V @-@ scale or the Fontainebleau scale .

The growing popularity of the sport has caused several environmental concerns , including soil erosion and trampled vegetation as climbers hike off @-@ trail to reach bouldering sites . This has caused some landowners to restrict access or prohibit bouldering altogether .

= = Overview = =

Bouldering is a form of rock climbing which takes place on boulders and other small rock formations , usually measuring less than 20 feet ( 6 @.@ 1 m ) from ground to top , but in some cases can measure up to 30 + ft . Unlike top rope climbing and lead climbing , no ropes are used to protect or aid the climber . Bouldering routes or " problems " require the climber to reach the top of a boulder , usually from a specified start position . Some boulder problems , known as " traverses , " require the climber to climb horizontally from one position to another .

The characteristics of boulder problems depend largely on the type of rock being climbed . Granite , for example , often features long cracks and slabs . Sandstone rocks are known for their steep overhangs and frequent horizontal breaks . Other common bouldering rocks include limestone and volcanic rock .

There are many prominent bouldering areas throughout the United States , including Hueco Tanks in Texas , Mount Evans in Colorado , and The Buttermilks in Bishop , California . Squamish , British Columbia is one of the most popular bouldering areas in Canada . Europe also hosts a number of bouldering sites , such as Fontainebleau in France , Albarracín in Spain , and various mountains throughout Switzerland .

= = = Indoor bouldering = = =

Artificial climbing walls are used to simulate boulder problems in an indoor environment , usually at climbing gyms . These walls are constructed with wooden panels , polymer cement panels , concrete shells , or precast molds of actual rock walls . Holds , usually made of plastic , are then bolted onto the wall to create problems . The walls often feature steep overhanging surfaces , forcing the climber to employ highly technical movements while supporting much of their weight with their upper body strength .

Climbing gyms often feature multiple problems within the same section of wall . In the US the most common method Routesetters use to designate the intended route for a particular problem is by placing colored tape next to each hold ? for example , holds with red tape would indicate one bouldering problem , while green tape would be used to set off a different problem in the same area . Across much of the rest of the world problems and grades are usually designated by using a set color of plastic hold to indicate a particular problem . For example , green may be v0 @-@ v1 , blue may be v2 @-@ v3 and so on . Setting via color has certain advantages , the most notable of which

are that it makes it more obvious where the holds for a problem are , and that there is no chance of tape being accidentally kicked off of footholds . Smaller , resource @-@ poor climbing gyms may prefer taped problems because large , expensive holds can be used in multiple routes simply by marking them with more than one color of tape .

### = = = Competitions = = =

Bouldering competitions occur in both indoor and outdoor settings . The International Federation of Sport Climbing ( IFSC ) employs an indoor format that breaks the competition into three rounds : qualifications , semi @-@ finals , and finals . The rounds feature different sets of four or five boulder problems , and each competitor has a fixed amount of time to attempt each problem . At the end of each round , competitors are ranked by the number of completed problems , with ties settled by the total number of attempts taken to solve the problems .

There are several other formats used for bouldering competitions . Some competitions give climbers a fixed number of attempts at each problem with a timed rest period in between each attempt , unlike the IFSC format , in which competitors can use their allotted time however they choose . In an open @-@ format competition , all climbers compete simultaneously , and are given a fixed amount of time to complete as many problems as possible . More points are awarded for more difficult problems , while points are deducted for multiple attempts on the same problem .

In 2012 , the IFSC submitted a proposal to the International Olympic Committee ( IOC ) to include lead climbing in the 2020 Summer Olympics . The proposal was later revised to an " overall " competition , which would feature bouldering , lead climbing , and speed climbing . In May 2013 , the IOC announced that climbing would not be added to the 2020 Olympic program .

### = = History = =

Rock climbing first emerged as a sport in the mid @-@ 1800s . Early records describe climbers engaging in what is now referred to as bouldering , not as a separate discipline , but as a form of training for larger ascents . In the early 20th century , the Fontainebleau area of France established itself as a prominent climbing area , where some of the first dedicated bleausards ( or " boulderers " ) emerged . The specialized rock climbing shoe was invented by one such athlete , Pierre Allain .

In the 1960s , the sport was pushed forward by American mathematician John Gill , who contributed several important innovations . Gill 's previous athletic pursuit was gymnastics , a sport which had an established scale of difficulty for particular movements and body positions . He applied this idea to bouldering , which shifted the focus from reaching a summit to navigating a specific sequence of holds . Gill developed a closed @-@ ended rating system : B1 problems were as difficult as the most challenging roped routes of the time , B2 problems were more difficult , and B3 problems were those that had only been completed once .

Gill introduced chalk as a method of keeping the climber 's hands dry . He also emphasized the importance of strength training to complement technical skill . Neither of these practices had been popular among climbers , but as Gill 's ability level and influence grew , his ideas became the norm .

Two important training tools emerged in the 1980s : Bouldering mats and artificial climbing walls . The former , also referred to as " crash pads " , prevented injuries from falling , and enabled boulderers to climb in areas that would have been too dangerous to attempt otherwise . Indoor climbing walls helped spread the sport to areas without outdoor climbing , and allowed serious climbers to train year @-@ round regardless of weather conditions .

As the sport grew in popularity , new bouldering areas were developed throughout Europe and the United States , and more athletes began participating in bouldering competitions . The visibility of the sport greatly increased in the early 2000s , as YouTube videos and climbing blogs helped boulderers around the world to quickly learn techniques , find hard problems , and announce newly completed projects .

In early 2010 , two American climbers claimed first ascents on boulder problems that have come to

be regarded as the most difficult in the world : The Game near Boulder , Colorado , established by Daniel Woods ; and Lucid Dreaming near Bishop , California , established by Paul Robinson . The following year , fellow American Carlo Traversi claimed the second ascent of The Game and in January 2014 , American Daniel Woods completed the second ascent of " Lucid Dreaming . " In 2011 , Czech climber Adam Ondra claimed the second ascent of Gioia , originally established three years earlier by Italian boulderer Christian Core , and suggested that it was among the world 's most challenging boulder problems .

= = Equipment = =

Unlike other climbing sports , bouldering can be performed safely and effectively with very little equipment , an aspect which makes the discipline highly appealing to many climbers . Bouldering pioneer John Sherman asserted that " The only gear really needed to go bouldering is boulders " . Others suggest the use of climbing shoes and a chalkbag as the bare minimum , while more experienced boulderers typically bring multiple pairs of shoes , chalk , brushes , crash pads , and a skincare kit .

Of the aforementioned equipment , climbing shoes have the most direct impact on performance . Besides protecting the climber 's feet from rough surfaces , climbing shoes are designed to help the climber secure and maintain footholds . Climbing shoes typically fit much tighter than other athletic footwear , and often curl the toes downwards to enable precise footwork . They are manufactured in a variety of different styles in order to perform well in different situations : High @-@ top shoes , for example , provide better protection for the ankle , while low @-@ top shoes provide greater flexibility and freedom of movement . Stiffer shoes excel at securing small edges , whereas softer shoes provide greater sensitivity . The front of the shoe , called the " toe box " , can be asymmetric , which performs well on overhanging rocks , or symmetric , which is better suited for vertical problems and slabs .

Most boulderers use gymnastics chalk on their hands to absorb sweat . It is stored in a small chalkbag which can be tied around the waist , allowing the climber to reapply chalk during the climb . Brushes are used to remove excess chalk and other debris from boulders in between climbs ; they are often attached to the end of a stick , pipe , or other straight object in order to reach higher holds . Crash pads , also referred to as bouldering mats , are foam cushions placed on the ground to protect climbers from falls .

= = Safety = =

Boulder problems are generally shorter than 20 feet ( 6 @. @ 1 m ) from ground to top . This makes the sport significantly safer than free solo climbing , which is also performed without ropes , but with no upper limit on the height of the climb . However , minor injuries are common in bouldering , particularly sprained ankles and wrists . Two factors contribute to the frequency of injuries in bouldering : first , boulder problems typically feature more difficult moves than other climbing disciplines , making falls more common . Second , without ropes to arrest the climber 's descent , every fall will cause the climber to hit the ground .

To prevent injuries , boulderers position crash pads near the boulder to provide a softer landing , as well as one or more spotters to help redirect the climber towards the pads . Upon landing , boulderers employ falling techniques similar to those used in gymnastics : spreading the impact across the entire body to avoid bone fractures , and positioning limbs to allow joints to move freely throughout the impact .

= = Technique = =

As with other forms of climbing , bouldering technique is largely centered on proper footwork . Leg muscles are significantly stronger than arm muscles ; thus , proficient boulderers use their arms primarily to maintain balance and body positioning , relying on their legs to push them up the

boulder . Boulderers also keep their arms straight whenever possible , allowing their bones to support their body weight rather than their muscles .

Bouldering movements are described as either " static " or " dynamic " . Static movements are those that are performed slowly , with the climber 's position controlled by maintaining contact on the boulder with the other three limbs . Dynamic movements use the climber 's momentum to reach holds that would be difficult or impossible to secure statically , with an increased risk of falling if the movement is not performed accurately .

= = Grading = =

Bouldering problems are assigned numerical difficulty ratings by routesetters and climbers . The two most widely used rating systems are the V @-@ scale and the Fontainebleau system .

The V @-@ scale , which originated in the United States , is an open @-@ ended rating system with higher numbers indicating a higher degree of difficulty . The V1 rating indicates that a problem can be completed by a novice climber in good physical condition after several attempts . The scale begins at V0 , and as of 2013 , the highest V rating that has been assigned to a bouldering problem is V16 . Some climbing gyms also use a VB grade to indicate beginner problems .

The Fontainebleau scale follows a similar system , with each numerical grade divided into three ratings with the letters a , b , and c . For example , Fontainebleau 7A roughly corresponds with V6 , while Fontainebleau 7C + is equivalent to V10 . In both systems , grades are further differentiated by appending " + " to indicate a small increase in difficulty . Despite this level of specificity , ratings of individual problems are often controversial , as ability level is not the only factor that affects how difficult a problem will be for a particular climber . Height , arm length , flexibility , and other body characteristics can also be relevant .

= = Environmental impact = =

Bouldering can damage vegetation that grows on rocks , such as mosses and lichens . This can occur as a result of the climber intentionally cleaning the boulder , or unintentionally from repeated use of handholds and footholds . Vegetation on the ground surrounding the boulder can also be damaged from overuse , particularly by climbers laying down crash pads . Soil erosion can occur when boulderers trample vegetation while hiking off of established trails , or when they unearth small rocks near the boulder in an effort to make the landing zone safer . Other environmental concerns include littering , improperly disposed feces , and graffiti . These issues have caused some land managers to prohibit bouldering , as was the case in Tea Garden , a popular bouldering area in Rocklands , South Africa .