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Olympic Games are a balancing act of lofty goals and visions, financial investment and advertising dollars, tradition and innovation. The slogan of the 2018 Games in PyeongChang — Passion. Connected. — embodies the vision to expand winter sports participation to a global audience. It also has been called the "Peace Olympics." North Korea agreed to form a women's ice hockey team of North and South Korean athletes under a single unified flag and to share musicians across the DMZ.

## TRADITION AND INNOVATION

From the first torch relay to the Opening Ceremony to the Winter Games' last event, volunteers are important to the success of the Games and experience of guests. They are present at Mountain and Coastal Venues, the Olympic Village and where tourists may need assistance.

NBC paid \$4.38 billion for U.S. broadcast rights for 2014-2020. Broadcast rights and sponsorships account for more than 90 percent of IOC revenue. For years many of the athletes and their families have struggled to pay their expenses, hoped for stipends and sponsorships, appeared in commercials and trained for these minutes of competition.

The activities suggested in this guide focus on the changes and technological innovations making the Winter Olympic Games a better and safer experience for athletes and viewers. In addition, several dimensions of the business side are viewed: the cost to athletes and their families, the role of sponsors and the benefits from and to advertisers.

As Korea stated in its bid to be the 2018 Winter Games host, its "vision for the 2018 Games is to offer the Olympic Movement and the world of winter sports New Horizons — a legacy of new growth and new potential never seen before.

#### **KidsPost**

# In the Olympics, what athletes wear is often more about science than style

Speedskaters try to shave fractions of a second off their times with the help of their uniforms' fabric

BY RACHEL FELTMAN

• Originally Published January 21, 2018

When you tune into the 2018 Winter Olympics next month, you'll see plenty of painstakingly picked pieces of clothing. In some cases, the outfits do more than just make competitors look snazzy: They can actually help them go faster.

You'll notice such high-tech duds during speedskating events, where athletes zip around ice rinks. It takes a lot of coordination to pick up speed while balancing on a blade — especially in short-track events, where skaters race all at once in a pack that is prone to painful pileups — so every sliver-of-a-second counts. But how can a suit speed you up?

Wave your hand around. You might feel some air blowing past you, but you probably don't feel that it's slowing you down. Imagine doing the same thing in a pool. You would feel resistance from the water. That's called drag. Air drags on you less than water, but drag it does.

Unfortunately for speedskaters, the human body isn't especially aerodynamic (AIR-oh-di-NAM-ick),



RICK BOWMER/AP

Speedskater Maame Biney (MOM-ay BY-nee) of Reston, Virginia, blazes her way across the ice during the Winter Olympics trials last month. (She made the team!) The 17-year-old's sleek outfit isn't only for fashion: A lot of science goes into skaters' suits.

which means we're not good at moving through air without encountering drag. Even strands of hair can catch air and slow us down — that's why swimmers often shave their bodies. It makes them better at slipping through water.

A skater's suit covers the body so that lumpy, bumpy skin isn't getting dragged through the air. Smooth surfaces such as nylon and spandex make the body sleeker, which makes it more aerodynamic. Many countries — including the United States — take that idea even further.

When designers at Under Armour crafted the U.S. suits for 2014, they spent more than two years testing more than 100 kinds of fabric in about 250 combinations. Using different materials meant designers had to be strategic about sewing them together, lest any bulging seams increase a skater's drag. They also wanted to minimize friction, or the



RM/U.S. SPEEDSKATING

Thomas Hong, 20, gets low to the ice for his short-track event last month at the Olympic trials. He also sports a suit that aims to make him go faster by reducing resistance from air as he speeds around the ice. He spoke no English when his family settled in Laurel when he was 4.

force of two surfaces rubbing against each other. That way, skaters lost less speed as their thighs moved past each other and when their arms rubbed against their bodies.

Designers at Under Armour also added tiny bumps to their speedskating suits. That sounds like it would increase drag, but those ridges keep skaters speedy for the same reason that golf balls whiz through the sky: The air above each dimple forms a little whirlpool, spinning quickly. That makes the surface move through the air as if on ball bearings, which adds a tiny lick of speed.

Despite all that work, Under Armour's 2014 speedskating suits didn't get much praise. In fact, the designs received some of the blame when U.S. skaters performed poorly. Most experts say the outfits weren't responsible for those lagging times, but athletes were so worried about it that the team switched to old suits for the rest of their events.

That just goes to show how important comfort and confidence are to performance. Norway's team recently announced that its members would be wearing blue suits because they skated faster in them than red ones. Unless they're bluffing, the only explanation for that improvement is that they simply feel faster in blue — which could make them skate faster.

So when you watch your favorite winter event, take a moment to appreciate the gold medalist's fashion choices. They're probably the result of years of research.

## UNIFORMS & THE COLD

Ice, snow and cold temperatures
— it's the Winter Games. Ralph
Lauren for the sixth time designed
the uniforms for U.S. Olympic and
Paralympic athletes. The red, white
and blue parkas unveiled in the
Opening Ceremony feature a heating
component inside.

The newly developed heating system is made of carbon and silver ink printed inside the jackets in the shape of an American flag. Powered by a slim battery pack, the heat can be set from highest (5 hours of heat) to lowest (11 hours). The buttons are so large they can be pushed when wearing the leather gloves.

The patriotic theme carries through in blue jeans and ski hat, a red, white and blue wool sweater, and bandana. A leather belt and brown suede mountain boots with red laces add an Americana accent.



#### PYEONGCHANG 2018

## Virtual reality helps U.S. Olympic ski team prepare for PyeongChang's great unknown

BY RICK MAESE

• Originally Published January 23, 2018

There are mountains in the Alps, from Austria to France, that veteran alpine racers have skied dozens of times over the years, so often they know every curve and can anticipate every bump.

"There's some guys on tour for 15 years who have 60 runs down these hills," said American skier Travis Ganong. "At that point, it's kind of ingrained — they know where to expend energy, where to save energy, where to push the line and where to hold back."

And then there's the downhill course for next month's PyeongChang Games, located in the Taebaek mountains about 90 miles east of Seoul, far removed from the World Cup circuit and foreign to most ski racers. Most of the world's top skiers have raced the Olympic course just a couple of times.

Looking for an edge, the U.S. alpine team turned to virtual reality technology that allows American

racers to memorize the hill and take hundreds of virtual runs down a fast, tricky course. Instead of getting a single training run in the days before the Olympic competition, many of the U.S. racers will step into their skis having spent several months virtually racing the course with the aid of a 360-degree video and a headset.

"If we can enhance their ability to learn that course, you'd certainly think that would have a positive benefit on them," said Troy Taylor, the high performance director for U.S. Ski and Snowboard Association.

Entering race day, he estimated, the average World Cup skier will have been on the Jeongseon course — site of the downhill, super-G and one run of the combined event — fewer than a half-dozen times. By comparison, he said the U.S. team can easily squeeze in dozens of virtual runs in just a couple of days, ensuring every skier is as prepared as possible for a run they've spent four years dreaming about.



COURTESY OF U.S. SKI AND SNOWBOARD ASSOCIATION

Alpine skier Laurenne Ross will compete in her second Olympics next month in PyeongChang. Unlike four years ago, this year the U.S. alpine team is utilizing virtual reality technology to prepare for the unfamiliar course in South Korea. She wore the headset and used the technology in St. Moritz hotel lobby during last year's world championships.

#### First on the slopes

The U.S. skiers are the first known Olympic team in the world to utilize virtual reality in their training. In the United States, many professional and college teams use the technology, though the point-of-view is usually stationary — a quarterback in the



COURTESY OF U.S. SKI AND SNOWBOARD ASSOCIATION While virtual reality technology can help skiers familiarize themselves with mountains and courses around the world, the U.S. alpine team hopes it can also aid in rehabilitation, allowing injured skiers to mentally navigate mountains. Here, Laurenne Ross, who will compete in her second Olympics next month, wears the headset as part of her rehabilitation last year from a knee injury.

pocket, for example — and not flying down a mountain at 80 miles per hour.

Two years ago, Taylor connected with STRIVR Labs, a Palo Alto, Calif.-based company that's considered a leader in the field for sports teams, and presented the problem. The skiers would be facing an unfamiliar mountain, but they had a small window of opportunity. There was a World Cup stop in 2016 on the Jeongseon course and Taylor

hoped STRIVR could capture video during that visit that would be helpful in Olympic preparations.

STRIVR works with a variety of sports outfits — the NFL's Cowboys and Jets, the NBA's Pistons and Wizards, the NHL's Blackhawks and Capitals and college football teams such as Clemson and Auburn, among them. But the company had never tried anything like a downhill course.

They attached a 360-degree camera to the helmet of one of the coaches and sent him down the course dozens of times, trying to find the same line that racers would ski two years later in the PyeongChang Games. STRIVR then stitched together the video and sped up the footage to match the speed of the fastest racers.

Derek Belch, the company's CEO, knew the challenges from the starting gate. Virtual reality that features motion often results in nausea for the user. Virtually weaving your way down a steep hill at speeds reserved for interstate highways felt like a certain stomach-turner.

STRIVR tried to stabilize the video and ski team officials paired the headset with other movement — often a balance disc or a simulator that mimics some of the movements and forces presented in a race — to keep the athlete moving with video.

"It actually ended up better than I thought it would be," Belch said. "... It's all about what the stomach can endure. I think one thing we actually underestimated was how solid the stomachs of these athletes are."

Most of the ski team has tried it but while some have utilized virtual reality dozens of times, others didn't feel as comfortable.

"You watch it and you get pretty sick and dizzy," said Ganong, who tore his anterior cruciate ligament earlier this month and will miss out on PyeongChang.

Resi Stiegler, who's entering her fourth Olympics, specializes in technical events and says it might be more beneficial for downhillers. She's tried it several times but always falls victim to motion sickness.

"I think the speed girls can really, really benefit from it," she said. "And younger girls who haven't skied the course before, they can learn what to expect before they get there."

Officials were encouraged by the feedback and quickly expanded their use of the technology beyond the Olympic mountain. They now travel with a 360-degree camera and have built up a library of World Cup courses that allows skiers to train for a race in Switzerland, for example, from a hotel room in Spain.

And they've especially found that it can be a valuable tool for injured athletes. The virtual runs allow those who can't physically get on the mountain to mentally practice racing any of the dozens of courses the U.S. ski team has recorded.

At the USSA's Center of Excellence in Park City, Utah, the team also utilizes a giant simulator, housed in the organization's gym. A skier steps into bindings and faces a huge screen that displays a course either via video or computer-generated imagery. As the racer appears to move down the course, the simulator whirs to

life, creating movement and generating forces that mimic the sensation of skiing. Steven Nyman, who missed most of the past year with a torn anterior cruciate ligament and is hoping to make his fourth Olympic team, said the simulator is a good bridge to returning to the mountain.

"When it comes to downhill, there's nothing like it obviously. But when you're making slalom turns on the thing, it's fairly realistic," he said. "It gains a lot of energy, there's a lot of pressure and rebound and that's what I was trying to do: Load up my left knee and see how it would react. Once things were feeling comfortable, I was like, 'Oh cool, I think I'm ready to go on the snow."

#### Skiing is just the beginning

Skiers, both injured or healthy, can pair the simulator with footage of the PyeongChang course or even strap on the virtual reality headset. Ted Ligety, a two-time Olympic gold medalist who's overcome a series of injuries in recent years to qualify for his fourth Winter Games, said it can help skiers identify landmarks and memorize changes in the terrain.

"It's still a far cry away from the actual sport," he said. "It's cool on the visual side of things. ... Especially on the downhill and super-G side of things, you can see the hill. That can be important in those events."

Most of the U.S. ski team has used the virtual reality headset or the simulator at least once, and Taylor said some have been using it at least weekly since the summer.

While they've been focused largely on their World Cup season, he said, many will start studying the PyeongChang course in more earnest in the next few weeks.

While virtual reality might be making its debut as a training tool at these Olympics, the technology is relatively new and many think it'll have an even bigger impact four years from now. Scott Reiwald, the USOC's high performance director, said he could see virtual reality being used in the next Olympic cycle to prepare athletes in the biathlon and some of the sliding sports, too.

"We've got our feet in the water. ... We're looking for opportunities and ways to expand that," he said. "It's happening but not as systematically as we'll hopefully be using it in four years time."

STRIVR's Belch notes, though, that there are limitations posed by most winter sports, such as snowboarding or figure skating. "I don't want to do anything goofy. ... I think there's only a handful of opportunities that are truly doable to be legit in VR," he said.

"In the case of what we're doing for the ski team, it's really a phenomenal use case. They will set a course a certain way for the Olympics and if they're not prepared for it — for those fractions of a second they can shave by knowing where the gates are going to be and having a comfort level of what that mountain looks like — you're at a huge disadvantage. This is something that we thought was a no-brainer use case as far as creating a competitive advantage."

Barry Svlruga contributed to this report. Rick Maese is a sports features writer for The Washington Post.



Exactly 700mm in length, the torch represents the altitude of PyeongChang which is 700 meters above sea level.

In white and gold tones, the torch is designed for beauty and to withstand the elements.



Designer Young Se Kim incorporated an air-tunnel to add oxygen on windy days and a five-sided shape at the base to allow water from rain and snow to drain.

The 7,500 torchbearers will wear white and gold uniforms meant for cold and rainy weather. The five-angled shape

in the middle of the uniform cap represents the spirit of sports, which connects races, nations, religions, genders, cultures, as well as the five continents, united by a common passion for the Games.

## **Physics** — The Winning Edge

Bobsledding — or bobsleighing as you will hear during Olympic Games — was invented in Switzerland and entered as a four-man Olympic team sport in 1924. In 2018 there are three events: two-man, women's two-person and four-man (which may be mixed gender).

What is this sport held on a track of about 0.85 miles long with an average slope of 9.48 percent? And what is the physics of the bobsled?

Let's use the four-man team as our example. The principles apply to all three teams. In this sport a sled runs down a track with a bunch of curves. If it were just about "falling" everyone would get a gold medal since Newton showed that all masses fall at the same rate regardless of their mass. So something else must be affecting the race. Momentum is the biggest principle to consider.

*Momentum* is the mass and velocity of an object multiplied together. It is the original way Newton defined his second law: The rate of change of momentum is directly proportional to the net applied force.

The sport of bobsledding changed in 1952 when the event went from a team of five to six friends on a sled to a team that consisted of only four men. This change minimized the affect of the size of the team. Additional limits were placed on the combined weight of the bobsled and team members — it was not allowed to exceed 630kg (1389lbs). This is a large enough weight allowance, that with the sled and all four members of the team, extra ballast mass is still added to achieve the maximum weight.

With all of the teams combined weights being the same and running down the same course, what can a team do to get an edge on victory? The other half of momentum is *velocity*. Teams must do all they can to start the fastest and maintain that speed all the way down.

Unfortunately there are *non-conservative forces* that slow the sled. Teams train endless hours to minimize friction, drag and skidding. Let's take a look at ways teams can find advantages to gain a spot on the podium.

#### The Sled

The sled is designed to reduce the amount of *drag* produced as it goes down the track. Air acts like a fluid as it flows around objects that are moving. Just as airplanes are designed to move through the air, bobsleds are put through wind tunnel testing to reduce as much drag due to the high speeds of the sled moving through the course.

Besides design, the materials used to cover the surface should be as smooth as possible to prevent the air from "gripping" the sled and slowing it down. The actual weight of the sled is not as much a concern since teams will add ballast weight to reach the maximum weight allowed. The sled does have a minimum weight of 175kg (375lbs) so getting a smooth aerodynamic surface is among the main features to help teams gain an advantage in their runs.

#### **The Runners**

The runners on which the bobsled glides are thin (~6mm) blunt pieces of metals. They are not sharpened to a point but are rounded. The blades are not allowed to be plated with specialty coatings or heated.

The blades ride on the ice producing a thin layer of water as the metal slides over the ice. This water is produced from the *friction* between metal and ice surface. It acts as a lubricant that immediately refreezes after the bobsled moves on down the track. With colder temperatures, the amount of water produced will be less as the heat with friction will be mitigated by the colder ambient temperatures. With less lubricant there will be more friction between the blade and ice causing a greater slowing force. The team can gain an advantage by competing during warmer parts of the day.

#### **The Sprint**

The bobsled contest starts with a sprint and loading of the bobsled. A team can gain the most advantage with a seamless and fast sprint. In the four-man team, there is a driver, brakeman and two additional pushers. This sprint is a coordinated effort to gain as much speed as possible to carry down the track. Athletes' shoes have spikes to increase traction on the slippery surface.

Most of the athletes have a background in sports that require bursts of speed (such as track and football). "They basically train like Olympic sprinters, but with more weight training," stated USA Bobsled and Skeleton representative Kristen Gowdy. They try to have the fastest 50m sprint.

Before the end of the sprint, the team must load the sled one at a time. The driver gets in first followed by the two push men and the brakeman last. They must fold themselves into the sled as compactly as they can without jarring the sled from its path. The biggest advantage a team will have is from a fast sprint that ends with a quick and smooth loading transition.

#### **The Track**

A bobsled track consists of a minimum of 15 curves including at least one Petersen curve. A Petersen curve is a feature with a 180-degree turn and a 270-degree bank angle. Once the team loads the sled it is all in the hands of



RICK BOWMER/AP

Pilot Codie Bascue (front), Nathan Weber, Carlo Valdes and Samuel McGuffie of the United States compete in the four-man bobsled at a World Cup event in Park City, Utah, in November.

the driver to maximize their speed and distance down the track. By the feel of the sled and his experience, the driver picks the best path down the track.

The fundamental v = d/t in physics fails in its application. The shortest path down the track may not be the best when the banking of curves and the effects of skidding are incorporated into the line the driver takes. The shortest path around a curve can cause the sled to skid around it creating extra friction slowing the sled. It can also create a bump between the track and sled reducing the speed and possibly causing the sled to get out of control.

The tracks are banked to let the mass of the team help the sled round the curve without skidding. The greater the bank angle, the more speed can be carried through the curve by using centripetal force. Going too high can cause the sled to go onto one blade or even fall/skid down. Going too low through a curve can cause skidding and bumping. The advantage gained from the track is from a skillful driver picking a line down the track that minimizes both the skidding and the overall distance traveled.

#### The Human factor

The bobsled event tries to minimize the effects of equipment and to make the run times based on the skill of the athletes. From the top, the sprint is the biggest factor for setting themselves up for victory by creating the most momentum down the hill. However, the fastest sprint does not guarantee a gold medal.

It is a long track with many curves that a team must work together to move around. The shifting of body weight in and out of curves, helmets bouncing around, the up to five times gravitational force (5g's) on their bodies, the slight adjustments of the driver in to and out of the turns and weather conditions are all factors that will distract and disrupt a run down the course. These are Olympic athletes applying their training, experience and knowledge to overcome variables on the track and produce the fastest time possible.

The teams are given four runs. They use physics to accelerate their push starts, to master the banked turns of more than 80 mph, and to achieve the fastest aggregate time.



The shapes that form the Games' logo are the first consonants of each syllable in the word PyeongChang when it is written in Hangul, the Korean alphabet.



The first character in the emblem also represents a gathering place where the three elements of Cheon-ji-in – heaven, earth, and human – are in harmony. The second character symbolizes snow and ice, as well as the athletes' stellar performances.

People from all around the world gather in the harmonious land of PyeongChang, as the Korean Olympic Committee says: "A square where the earth meets the sky and where athletes excel in snow or on ice — where everyone will celebrate the world's biggest winter festival in 2018."

**ABOUT THE AUTHOR** Michael Van Eaton wrote the introduction to the physics of bobsledding article and the three labs that follow. Van Eaton, a graduate of Purdue University who majored in material science and engineering and chemistry, teaches AP Physics and Chemistry at Auburn Riverside High School in Auburn, Washington. He coaches water polo and swimming.

## 3 Labs: The Physics of the Bobsled

#### **Bobsled Steering**

#### **Materials**

Volleyball Hula hoop

With a partner, see if you can get the volleyball going around the inside of the hula hoop. One partner should hold the hula hoop just above the ground so it meets the volleyball at its midpoint. The other partner should help get the ball moving on the inside of the hoop. The partners need a coordinated effort to get the ball rolling inside the hoop.

The hoop "driver" then needs to use a hula motion to keep the ball rolling around the inside of the hoop as fast as they can. Small adjustments in the hoop motion and angle can drastically change the speed and control of the volleyball.

Once the teams have practiced, compete against each other from the start until twenty complete rotations have occurred. Cheer the team that takes the least time to achieve 20 complete rotations. See if they will share their technique.





Eyvar Robles and Jayden Taylor (foreground) compete with Riley Davis and Karlie White (background) to control the ball for 20 revolutions. Controlling the ball will require minor adjustments of the hoop by these Auburn (Wash.) Riverside High School students.



In the sport of bobsled, Meyers Taylor says, "we're all playing with Newton's laws. And whoever can navigate those laws the best, wins the race."

"A lot of physics actually goes into it," Cunningham adds with a grin. "Go figure, because in high school, I was always, 'Ah, I don't need this stuff, I'll never use this stuff again.' And now, that's how I make a living."

— "A Kind of Chaos: The Science and Sports of Bobsledding"

#### **Friction of Ice Lab**

#### **Materials**

Cookie sheet with sides (jelly roll pan)
Towel
Ice cube tray
Small resealable bag
Large resealable bag
Rock salt
Rubber band
Force probe or spring scale



Fill the cookie sheet with water and freeze. Make some ice cubes in a tray. Carefully remove the cubes from the tray. If they do not have a flat side, use a hot plate or iron to smooth one side. Refreeze to make sure it is solid.

Put an ice cube in a small resealable bag. In the large resealable bag put some crushed ice and rock salt. This mixture can reach -10 degrees Celsius. Place the small bag with an ice cube in the large bag. This will get the ice cube colder so you can compare the friction of warm ice to cold ice.

Spread out a towel on a table. Place the cookie sheet upside down on it so the metal surface is facing up. This will simulate the metal blade of a bobsled runner.

Get one of the ice cubes from the freezer and place a rubber band around it. Attach the force probe or spring scale to the rubberband.

Place the ice cube on one end of the cookie sheet. Pull with a constant velocity and read how much force is required. Repeat with the cold ice cube that is in the rock salt mixture. Compare values. If your ice cube is large enough, repeat the procedure with more mass on top.

#### **Bobsled Petersen Curve Lab**

#### **Materials**

Large plastic garbage can Wire (heavy gauge) or Wood hoops Marbles or Ball bearings

The Petersen curve is a 180-degree turn with a 270-degree bank. This is the massive turn where the bobsled rides "up" the wall. This allows the bobsled to maintain high speeds by picking a line "up" the bank and then back down.

If the driver picks too low of a line, the sled will skid around the curve slowing it. If the driver picks too high of a line, it could fall off the track or slow with the longer distance around the curve.

This track is designed to see how fast students can roll a

marble around the track without losing control. To create the track, cut the pattern out of one side of the plastic can. Bend wire around a basketball or use pieces of a wooden hoop to give support to the curve.



#### 👺 PYEONGCHANG 2018

## Diversity at the Games: Plenty of progress and plenty of work still to be done

BY RICK MAESE

• Originally Published February 5, 2018

The U.S. Olympic Committee says it's taking its most diverse team ever to a Winter Games, an impressive and deserved boast that requires a caveat of sorts.

Yes, USOC officials are pleased the team includes more African Americans and Asian Americans — and even the first two openly gay men — than recent winter squads. But they also realize this year's U.S. Olympic team, not unlike those

of most other nations gathering in PyeongChang this week, is still overwhelmingly white.

"We're not quite where we want to be," said Jason Thompson, the USOC's director of diversity and inclusion. "... I think full-on inclusion has always been a priority of Team USA. I think everybody's always felt it should represent every American."

Team USA numbers 243 athletes, which is the largest team any nation has sent to a Winter Olympics. Of that group, 10 are African American — 4 percent — and another 10 are Asian American. The rest, by and large, are white. The Winter Games

contingent is typically much smaller than its summer counterpart, but the demographic differences are striking. The United States took more than 550 athletes to the 2016 Summer Games in Rio de Janeiro. Of that group, more than 125 were African American — about 23 percent.

This year's winter squad includes the first black long-track speedskater — Erin Jackson, who transitioned to the spot from inline skating — as well as the first black hockey player, Jordan Greenway, and first black short-track speedskater, 18-year-old Maame Biney, who moved from Ghana to the Washington area when she was 5 years old.

"It means a lot. I'm just really, really honored to have that title because then that means I get to inspire young African American athletes," Biney said, "or any other race ... to try this sport or try any other sport they think they can't do."

Asian Americans have seven spots on the figure skating team, two in speedskating and another in snowboarding, and five of the American bobsledders competing PyeongChang are African American.

The lack of diversity on the winter teams is certainly not a new issue, and it's not unique to the United States. But the USOC has identified it as an area for targeted growth. Thompson was hired to his post



COURTESY OF U.S. SKI AND SNOWBOARD ASSOCIATION

Jordan Greenway, the first black U.S. Olympic hockey player, says, 'I hope kids see that it's good to play hockey, too.'



STACY REVERE/GETTY IMAGES

Shani Davis waves to the crowd following a January event in Milwaukee.

in 2012, shortly after the job was created, because the USOC saw room for improvement at every level: from athletes and coaches to the officials who run the national governing bodies for each sport and executives who work for the USOC.

"Since that point, we've just been trying to find ways to make sure our team looks like America," he said.

#### **Keeping score**

The Ted Stevens Act requires each sport's governing body and the USOC to send a report to both Congress and the president every four years that, among other things, details participation of minorities, women and people with disabilities. In a step toward even more transparency, the USOC now requires each sport's governing body to submit a diversity scorecard each year. While the reports include

benchmarks and goals, the results offer statistical snapshots of each sport, and especially for the winter offerings, underscore the areas that are lacking.

"We wanted to see what that diversity looks like, how we could measure it, track it," Thompson said. "That has had an incredible impact. I think it means we're being transparent with our fans, so people can see No. 1, it's a priority, and No. 2, we're being honest about it. In some areas, we got some work to do."

Sports such as figure skating, speedskating and bobsledding consistently boast a stronger mix of athletes, according to a review of the annual scorecards, but other sports struggle from year to year. For example, of the 188 athletes counted by the U.S. Ski & Snowboard Association in 2014 — the year of the Sochi Games just 2 percent were minority. USA Hockey reported 131 national team players in its system in 2016 and reported no minorities. USA Luge had 87 national team athletes in 2015, and for a second straight year had zero percent minorities.

"I don't think there were any surprises," Thompson said. "I think most people knew we had some challenges."

Most of the winter sports face two major hurdles in diversifying their respective ranks: geography and economics.

Most winter sports can be practiced only in specific areas. For example, there are only two tracks in the United States for aspiring bobsledders, luge or skeleton racers, one in Utah and another in Lake Placid, N.Y. That could eliminate a large swath of potential competitors. Other sports, such as curling, might be popular in certain regions; some take place on snow or on the mountains; and others, such as speedskating, have rinks or coaching only in certain parts of the country.

Greenway, the 20-year-old forward for the men's hockey team, grew up in Canton, N.Y., just 10 miles from the Canadian border. He laced up his first pair of skates at a young age and had no shortage of rinks nearby. But he knows many other African Americans don't have the same resources.

"I think it's great that I've gotten to where I've gotten," he says. "It kind of feels like an inspiration, trying to get more African Americans like me trying to play hockey, not falling into stereotypes of playing football, basketball. ... Obviously, there's not a ton of African Americans playing hockey. It's worked out great for me. I've had a great experience with it. I hope kids see that it's good to play hockey, too."

#### **Costs and benefits**

Many winter sports also come with a heavy cost. Competitors can't simply roll a ball onto a field or lace up a pair of running shoes. There's winter gear, lift tickets, ice time, specialized equipment, coaching, travel.

"I think all of our winter sports realize that's one of our challenges," Thompson says."... We always come

from this assumption that minorities are poor. That simply isn't true. So we need to nuance our delivery to reach different communities."

A handful of grass-roots programs across the country try to make winter sports more accessible — perhaps with free ice time to P.E. classes during the school day, transportation to ski lifts or ice rinks, donated equipment and free instruction.

Speedskater Shani Davis will be competing in his fifth Olympics, and in 2006, he became the first black athlete to win a gold medal in an individual sport at a Winter Games. But even before that, he was integral to the launch of DC-ICE, a nonprofit that has helped introduce the sport to thousands of inner-city youth in the District of Columbia. He still serves as honorary chairman and travels to Washington regularly for events.

"The No. 1 thing for us, it has nothing to do with natural athletic talent. That's the least important factor," said Nathaniel Mills, a three-time Olympic speedskater who runs DC-ICE. "By far, the biggest factor is parent support. Is there a parent who's going to bring their kid at 6:30 a.m. in January to practice? The commitment of time and the financial outlay is significant."

When Biney was barely 5 years old, she was pointed to DC-ICE and made weekly treks to Fort Dupont Ice Arena from her home in Northern Virginia. Her father, Kweku, who works in maintenance for a company in Reston, poured thousands of dollars and sacrificed thousands of hours for his daughter to pursue the sport.

"For every Maame, there's 20 other

kids who are more naturally talented in speedskating but didn't have the family support, either economically or from a nurturing perspective to get to that next level," Mills said.

Bobsledding has become the most diverse American winter team by carefully selecting its elite competitors. USA Bobsledding actively recruits from other sports, which means its ranks are filled with athletes who have excelled in sports such as track and field or football.

Aja Evans grew up in Chicago. She was a sprinter who dreamed of competing in the Summer Olympics. But she was recruited to bobsledding, won a bronze at the 2014 Games and is hoping for gold this month in her second Olympics. She had to suffer through a lot of jokes in recent years about "Cool Runnings," the 1993 Disney movie on the Jamaican bobsled team — "literally, I've heard them all" — but is now an ambassador for her sport.

"It's just a lack of knowledge," she said. "A lot of people don't know. Everyone has different body shapes. It's a lot of diversity. I think that's the direction the sport is headed."

While the USOC is happy to celebrate the makeup of its PyeongChangbound Olympic team, it knows even bigger strides can be made over the next four years.

"We still have some work to do," the USOC's Thompson said. "I think it's raising the visibility of the importance of diversity and inclusion. I hope we're seeing some of that. We're not quite there yet."

Adam Kilgore contributed to this report.



You will see Bandabi at the Olympics, but he is the official mascot of the 2018 Paralympics.

A native to the Korean peninsula, Bandabi is an Asiatic black bear. Like white tigers, black bears are important to South Korean myths and culture. The bear is a symbol of strong will and courage — qualities of all Olympic athletes.

Bears are also thought to be friendly in South Korea. Watch Bandabi greet visitors to his home.

His name is formed from two Korean words: "bandal" means half-moon (as seen in the white crescent on Bandabi's chest) and "bi" that indicates a love for and celebration of the Games.

Bandabi is strong, courageous and determined like the paralympians who will compete in PyeongChang March 9-18.



### PYEONGCHANG 2018

## The Sky's the Limit

BY RICK MAESE

Chloe Kim's appeal is easy to understand. With a snowboard strapped to her feet, she can twirl and flip and generally send eyeballs rattling in sockets better than any teenage girl who ever has set foot on snow. A four-time X Games champion, she already might be an Olympic medalist if rules didn't bar her from competing at the Sochi Games four years ago as a 13-year-old.

But talent is only part of the equation. Kim comes equipped with a bubbly personality — candid, eager and relatable — and a Korean heritage that makes her marketable at home and abroad. NBC long ago tabbed her as one of the faces of the PyeongChang Games, featuring her in a promotion that aired during the Super Bowl. Nike plans to feature her in a campaign on the ground in South Korea this month, and among her myriad sponsors is a South Korean-based cosmetics company. Oh, and she speaks English, French and Korean.

"You'd be hard-pressed to create a more promising brand spokeswoman in a lab," Sports Business Journal declared this month.

How unique and marketable is she? Consider this: Kim obtained her California driving permit in November 2015. Barely five months passed before she signed a major sponsorship deal with Toyota, just days after her 16th birthday.

Kim, now 17, could emerge from these Olympics as a transcendent athlete — in the vein of a young Shaun White or Michael Phelps even — but she enters them already comfortable with who she is. Her Korean-born parents immigrated here more than 20 years ago, and she will have no shortage of extended family members gathering around the PyeongChang halfpipe. Despite her close ties to the host nation, Kim feels little internal struggle over cultural identity.

"I'm so used to America, used to the traffic in L.A., and I don't really feel it click with the Korean culture," she explained recently. "But obviously I have a Korean face, and I feel like that's just — you know, I

can't walk around people like I'm, like, straight-up American. It's like, I'm Korean American. My parents are from Korea.

"I don't know. It's weird. I just grew up in the States, so I feel like I identify more with the American culture."

Identity is always a curious thing at the Olympics, especially as nations increasingly recruit athletes from around the globe, sometimes with only tenuous ties to their country. That Jamaican bobsled team competing in PyeongChang? One member is from New Jersey. The Nigerian sled will feature women from Texas, Illinois and Minnesota. The South Koreans will field nearly 20 athletes from other countries, and about three dozen U.S.-born athletes will be representing other nations at these Olympics.



SEAN M. HAFFEY/GETTY IMAGES

Chloe Kim who showed a natural ability and will to work, has been described as one of the most talented young snow boarders.

There's little confusion for Kim, the chatty SoCal teen with blond highlights, active social media presence and unlimited athletic potential whom the world is about to meet.

"I always get the question, like, 'Where are you from?' L.A. 'No, where are you really from?' I was born in Long Beach. 'No, no, like, where are you really, really from?'" she said. "... I always get that question. It's never, like, my first answer would be, 'I'm from Korea,' or, like, 'I'm Korean.' It's always, like, 'I'm American.'"

#### **Family commitment**

Kim's parents met in Switzerland when both were working for travel agencies. Jong Jin Kim and his wife, Boran, found their way to Southern California, where he studied engineering and the couple raised their three daughters.

Chloe is the youngest and was all of 4 years old when she snowboarded for the first time. Jong took her to Mountain High resort in the San Gabriel Mountains outside of Los Angeles.

"He wanted my mom to go with him," she explained. "So he took me as bait."

Kim showed promise on a snowboard early, entering her first competition at 6 and winning junior nationals a year later. Even when she moved to Switzerland for two years at age 8, she made regular treks to the Alps. She would wake up at 4 a.m., take two trains to reach a halfpipe in France and continue her training.

"It was kind of crazy now that I think about it," she said with a laugh.

When she returned to the States, she joined a developmental program at Mammoth Mountain, and her potential started to come into focus. By then, the Olympics were a distant goal for the family, and Kim's father quit his engineering job to help make it a reality.

"Obviously, when I was 8, I had no idea what he was doing," Kim said. "It was, like, 'Why is Dad home more?' You know? But now that I think about it, you know, I feel like it was a really bold move, and I can't believe my mom was okay with it."

The Kims started home-schooling and doing online courses with their daughter in middle school, and every weekend Jong would drive 5½ hours from their home in La Palma to Mammoth so Kim could learn from the best. Their lives suddenly seemed to revolve around a dream, which Kim said startled some of their relatives back in Korea.

"I think at first it was a little hard for them to support it," she said, "because, you know, I feel like a Korean's ideal thing is their kid being, like, a lawyer, a doctor."

Anyone who saw her on the snow, though, understood. Kim was soon entering bigger competitions, steadily posting higher scores and drawing more attention along the way, from other competitors and potential sponsors.

"Chloe is one of the most talented young snowboarders I'd ever seen," said Kelly Clark, who is heading to her fifth Winter Olympics. "I remember talking to Burton [a snowboard manufacturer] about her when I first saw her in Mammoth. I said, 'Hey, I've never suggested that you pick up any athlete — except for this girl. This girl is someone you should sponsor and you should get behind. She has the potential to go very far.'"

The Sochi Games were not an option because the Olympics bar anyone younger than 15 from competing, but 2014 still marked the year Kim announced herself as one of the world's best in the halfpipe, winning silver at the X Games at just 13.

It meant she had four years to prepare for her first Winter Games, and the Olympic world had four years to prepare for her.

#### **Star power**

Since she was small, Kim has visited her family in Korea almost every year. She enjoys going out with cousins there, sampling local cuisine and taking a break from her sport. "It's cool. I feel like I have another life," she said.

Even back in California, she never feels too far removed from Korean culture.

"Since I travel with my parents, my mom is always cooking Korean food," she says. "So it's, like, I always want American food. It's like, I need In-N-Out. We need to go to Chipotle. KFC, where are you at?"

Her most recent visit to Korea came in February 2017, when the U.S. State Department tapped her as a special envoy for a goodwill tour. It was her first taste of how she might



SERGEI ILNITSKY/EUROPEAN PRESSPHOTO AGENCY/EFE/REX/SHUTTERSTOCK

Day 4 of the 2018 Winter Olympics in PyeongChang. Feb. 12, 2018 Chloe Kim, 17, of the United States posted the top score during qualifying Monday to earn the top seed in Tuesday's final in women's halfpipe snowboarding. Kim was the only rider to go over 90 points, putting up 91.50 in her first run and topping it with 95.50 in her second.

be received at these PyeongChang Games.

"It was actually really crazy; I had, like, a paparazzi moment there," she said, "which was, like, kind of cool. I felt like Kim Kardashian. ... I look up, and there's like 25 cameras around."

Snowboarding is still a growing sport in South Korea. Since 1992, the country has won 53 medals across eight Winter Olympics. All but two have come in speedskating or short-track speedskating. The host nation might only compete for a handful of medals at these Olympics, but Kim gives Koreans someone else to root for.

"I think people know that she's from the USA, but her background is Korean. We can distinguish that she's American," said Im Bomi, a sports reporter for Dong-A Ilbo, one of the country's largest daily newspapers. "But we respect that she's a talented snowboarder who speaks Korean and who shares common things with us."

In South Korea, headlines regularly refer to her as the "genius snowboarder" and highlight her Korean roots, noting her fondness for eating spicy rice cakes — a common after-school snack — and her predilection for K-pop groups such as Girls' Generation, Shinee and Super Junior.

"She's just like a South Korean teenager," the Hankook Ilbo newspaper reported.

She has also become a role model for kids in the country. The U.S. Embassy in Seoul produced a video called "Just Like Chloe Kim," featuring young Korean girls who want to snowboard like the Korean American teenager. Her goodwill trip last year included visiting the mountains, touring the U.S. Embassy, meeting local reporters and chatting with Korean college students.

"I'm, like, finishing up high school. I don't know how you can learn anything from me because I'm still, like, a teenager," she recalled. "I don't know what I'm doing with my life."

She was plenty familiar with the people, the culture and the sprawling city of Seoul but was still taken aback by the attention, each stop reinforcing to her what she is and what she isn't.

"I was in Korea for media," she said, by way of example, "and they do my face so pale. I had so much makeup on my neck to make it look like I'm pale. But, like, my hands are this color, and I'm not pale. ... It's definitely really different, and it's kind of shocking to get used to, I guess."

Back in the United States, she's more well known, her face already ever-present on NBC promos in the weeks leading into the Olympics and her fan base bigger than any single demographic. "I got mail from a prison once," she said with a laugh.

Kim is still among the youngest competitors at most competition stops, and she will wrap up her final year of high school this spring. She is applying to colleges and knows the next phase of her life — with or

without an Olympic medal — will be different.

For now, she travels with both parents and has a publicist and a high-profile agent. She is backed by many big-name Olympic brands — Visa, Samsung and Oakley among them — but seems unaffected by the expectations that might be accompanying her to PyeongChang.

When she is entering the pipe, she

is not thinking about any of that, of course. She rides up the 22-foot-high wall, climbing and climbing, before launching into the air. Kim spins and she flips and, for what can feel like several seconds, she looks like even gravity can't pull her back down to Earth.

Min Jung Kim in Seoul contributed to this report.

#### **Olympic History**



Sonja Henie, 11, strikes a pose with world champion skater Gilles Grafstrom at the 1924 International Winter Sports Week, later known as the first Winter Olympics. Henie won gold medals in the 1928, 1932 and 1936 Olympics.

ACCOMMODATIONS

Eight 15-story buildings in PyeongChang create the Olympic Village where athletes will live. They were full before the Opening Ceremony began. Just about everything the athletes and their coaches need to be comfortable are available here: dining and laundry facilities, general store and post office.

The simple bedrooms are brightened with colorful comforters decorated with the Olympic sports symbols.

Nearly 3,000 athletes from more than 90 countries will be competing in 102 events in 15 official sports. Between practice and competing, they may gather at the recreational center to get acquainted.



### **On Your Mark**



One of the new venues. Alpensia Sliding Centre, sits on 44 acres and has chutes for bobsled. skeleton and luge events. Completed in late 2017, it cost approximately \$114.5 million to construct.

#### **Ticket prices for the Opening Ceremony vary by tier:**

A 1,500,000 KRW (\$1,376.44); B 800,000 KRW (\$734.00); C 600,000 KRW (\$550.48);

D 220,000 KRW (\$201.83)

(KRW = South Korean Won. Seat prices are based on Feb. 8 conversion rate.)



Broadcast rights agreements are the single greatest been essential in the growth of the global popularity of the Olympic values.

Olympic Games and the worldwide promotion of the Olympic values. proaceast rights agreements are the single greatest have source of revenue for the Olympic Movement and have source of revenue for the order of the source of revenue for the order of the source of revenue the mount of the source of the sour source of revenue for the Ulympic Movement and have the Gource of revenue for the growth of the global popularity of the been essential in the growth of the recording of the Okranic Comes and the worldwide near the order of the Okranic Comes and the worldwide near the order of the Okranic Comes and the worldwide near the order of the Okranic Comes and the order of th

When you're on a Wheaties box, even if this endorsement pays less than other advertising gigs, it's a signal to the world that you have ascended to the top of your sport, that you are a true champion.

of health insurance and give a stipend for winning events provide athletic sneakers and snowboards, pay a portion Some U.S. Olympic hopefuls live below the poverty line. They work at Dick's Sporting Goods, McDonald's and which may be six to 12 hours a day. Sponsors may set up GoFundIMe pages. local businesses, athletes There is no direct financial support for U.S. athletes. The youngest athletes depend on their parents. Some have mortgaged their homes,



**Nathan Chen** 

taken a second job, quit a job to travel with the hopeful athlete or borrowed money. Those athletes who show talent, win meets and remain dedicated may receive a stipend from governing boards of their sports or secure a sponsor.

#### No penalty: Small businesses let sports fans enjoy big games

NEW YORK — Millions of workers at small businesses will be distracted in the coming months by a series of big sporting events: the Super Bowl, Olympics, NCAA basketball and World Cup soccer.

Some company owners realize that trying to eliminate sports talk or forbidding staffers to watch games is demoralizing and also difficult to achieve.

### The Price — and Profit — of the Olympic Games

South Korea, the 2018 host country, is gambling on success during and after hosting the Games in order to break even or make a profit. Before the Olympic Games began, it was reported that the government had spent nearly twice what they anticipated — nearly \$13 billion. The hopes are that the Alpensia Mountain Cluster and Coastal Cluster will become another Sapporo, Japan. The 1972 Winter Olympics host was transformed from a sleepy mountain area to a major sports draw with housing and venues still being used.

A recent study of Games since 1960 found the most expensive Summer Games to be London 2012 (15.0 USD billion) and Barcelona 1992 (9.7 USD billion) and the most expensive Winter Games to be Sochi 2014 (21.9 USD billion) and Torino 2006 (4.4 USD billion). Transportation infrastructure is not included in the costs.

Why would a country want to host the Olympic Games? And who can be expected to benefit from participation? Consider the following areas to find some answers.

#### **The Host Country**

For the Winter Games, elevation, population and topography are major factors in deciding on a host country and city. Existing infrastructure and facilities are also factors.

- What factors determine if the host country gains or loses financially?
- Which local businesses are likely to profit during an Olympic Games?
- How many countries have used Olympic facilities after the Games for continued local use? [For example, Lake Placid used the athletes' village as a prison.] For hosting other local, national and international sports events and to offer training facilities?
- How many countries have increased tourism and become an international destination?

#### **Prestige for Individuals and Countries**

What price tag can be placed on the prestige of being a host city? Or being an Olympic athlete, even if you place last?

- What countries have benefitted by having the most medalists? Explain how this has happened.
- What countries have benefitted by having the most medalists in a particular sport?

#### **Tickets and Olympic-Related Merchandise**

Tickets into venues, especially those filling the stands in large buildings, provide a dependable source of income.

- Who gets the profit from sale of Olympic-related merchandise such as the mascots and torches?
- Ticket sales for seating varies from \$1,376 for the opening ceremony to \$27.53 for a figure skating practice or \$504 to \$137 for figure skating short and long program contests. Why do these seats need to be filled in new and refurbished venues?

#### **Corporations**

Ralph Lauren clothing, Coca-Cola samples, Visa promotions and other corporate sponsors have invested in the Olympic Games.

- What are the benefits to the corporations that are Olympic Games sponsors? Who are they in 2018?
- How do they make themselves known?
- Which can benefit by selling Olympic-related merchandise?

#### **The Individual Athlete**

Olympic athletes require years of training, competing from an early age before meeting the 15-year-old age requirement to compete on the Olympic stage, and some face considerable financial demands on themselves and their families.

- Which countries identify promising athlete, pay for their training and daily needs?
- How do American athletes pay for their coaches, travel expenses, uniforms, and other expenses?
- Which contemporary athletes have benefitted by Olympic success, especially if they were not on a professional sports team?
- Do any countries pay their athletes for being a gold, silver or bronze medalist?
- Does it pay to appear on a Wheaties (or other) cereal box?
- To whom would a medalist sell his or her medal? What is the gold content of a gold medal? What about the auction block?



# At the DMZ, Korean reunification seems an impossible task for these 'Peace Olympics'

BY RICK MAESE

• Originally Published February 8, 2018

PAJU, South Korea — He was there on the other side of the river, but through the binoculars, there was no way to tell whether he was happy or miserable, content with his life or obsessed with finding a way out. He was just a figure working Wednesday morning in a field in the

southwestern corner of North Korea, and for the purposes of those of us clustered on the southern side of the river, gawking from less than a mileand-a-half away, he was presented as an exhibit.

The Pyeong Chang Winter Olympics officially will start Friday in this country — on this side of the river — and when you listen to organizers, you will hear how these are intended to be the "Peace Olympics" so many times that you either will start to believe it or become numb to it. Standing in someplace called the

Odusan Unification Observatory on Wednesday morning, looking across the intersection of the Han and Imjin Rivers into North Korea, the history of the Korean Peninsula was plain to see. The land on either side of the rivers had for centuries been home to a single, unified nation. That man over there, the guy in the field on the other side of the Demilitarized Zone — isn't it a shame he can't rejoin his southern brethren?

Every Olympics has its backdrop, and some are more complicated than others. The Summer Games in Rio



A look at the dangerous Korean border, with the Olympics nearby.

LEE POWELL/THE WASHINGTON POST



ED JONES/AGENCE FRANCE-PRESSE/GETTY IMAGES

South Korean soldiers stand guard at Tongil bridge in Paju, at the end of the Demilitarized Zone (DMZ) that divides the two Koreas.

left us wondering how countries in which millions of residents endure impoverished lives could host such an expensive, extravagant festival — and to what end? The Sochi Winter Olympics four years ago introduced us to the ego and power of Vladimir Putin on his own turf. The 2008 Beijing Games put China's human rights record in focus.

Now, this: a Winter Olympics hosted by an established economic force with a crotchety, antagonistic relative less than 50 miles away. The Peace Olympics will be an idea buoyed because athletes from North and South Korea will march together in Friday night's Opening Ceremonies, because the two countries will form one women's hockey team, because Koreans — whether from Seoul or Pyongyang — will root for other Koreans of any stripe. Wednesday even brought news that North Korean

leader Kim Jong Un would be sending his younger sister, a powerful member of his inner circle, as part of a delegation to South Korea, an unexpected development that could be an indication that Kim might be willing to have a more productive relationship with the government in Seoul.

"We will use sports as a tool for peace," said Lee Hee-beom, CEO of the PyeongChang Games.

It's a nice thought, and it goes back to an Olympic ideal that has long been obscured by all the Coca-Cola and McDonald's and Visa money.

But it's also oversimplified, even painfully so. These Olympics could well be an athletic, commercial and even cultural success. But by themselves, they are not going to bring peace between countries — and that's what they are, separate countries — that have been divided,

initially against their will, since the end of World War II.

We need no further evidence than to consider Kim's other plans this week: a massive military parade to show North Korea's might, staged on the eve of the Olympics. Maybe all those tanks and missiles simply had Thursday free on their calendars.

Because it's clear, then, that these Olympics will be colored by the relationship — the history and future — between the two Koreas, on Wednesday morning I departed Seoul on a bus loaded with curious Westerners — mostly Americans for a tour of the Demilitarized Zone, the DMZ. That such tours existed was news to me just weeks ago, as was the fact that you could look into North Korea, walk a few hundred yards and have lunch at a Popeyes. The disagreements between the two Koreas involve military might and human rights, and they're all rolled into a smoking-hot geopolitical conflict.

"Is anybody scared? Nervous?" our guide, Gina Lee, asked as we pulled out of Seoul.

It's nearly impossible, with the neon and high-def screens that mark Seoul's skyscrapers, to believe that 60 years ago, South Korea was a third-world country with a recent history of Japanese control and a future that seemed iffy at best. At the end of the 1950s, the per capita gross domestic product was around \$100. The wounds of the postwar division from the north — in which Japan was ousted but the Soviets controlled territory above the 38th parallel, the

United States south of it — were fresh. The Korean War had just ended.

That story is an essential part of the South Korean experience, and the exhibits at the Odusan observatory focus on the pain the split caused. Brother was separated from brother, mother from daughter, father from son. It is an anguished tale, and the case for reunification is made throughout the five-story building on a mountaintop, windows pointing north.

"Our hope is reunification," concludes a film, narrated in English, shown to Western visitors. "It is the greatest wish of the Korean people. We hope for one Korea."

And yet present-day polls don't reflect that sentiment. South Korean citizens with relatives left behind in the north are aging, almost all in their 70s and 80s. Young South Koreans know nothing of "one Korea" and have a keen understanding that reunification would come at a heavy financial cost to their country. Kim — and his father and grandfather before him - have stripped the North Korean people of their rights and their wealth, while South Koreans have worked for nearly three generations to build a society that values education and fosters competition so it can surge forward.

On our bus was Kim Hana, a 50-something woman who has invented a new name as she invents a new life. Kim is essentially a professional North Korean defector. Her job: telling the assembled how, in 2011, she walked for some 16 hours from her home to the North Korean border with China, how she waded through waisthigh water into the guardianship of a smuggler, how she was then sold

to another smuggler and forced to live with him for two years and how she eventually escaped to Cambodia and then Thailand before making her way to Seoul — all with her daughter left behind in North Korea. Had she been caught, she said through Lee's translation, she would have been killed.

More than 30,000 defectors live in South Korea, and Kim did not hesitate when asked whether she favors reunification: Absolutely. She is now sending money back to her daughter through Chinese smugglers, but her daughter can't allow her fellow townspeople to know she is receiving it. Looking into North Korea, which she now does as the means to make that money, makes her feel one emotion more than any other.

"Very sad," she said. So, then: Luge, anyone?

On Wednesday morning, as we looked across the river into North Korea, music wafted from the other side. Propaganda, we were told. The South Koreans do it, too. Further north and east, we stopped at Imjingak, where the so-called "Bridge of Freedom" extends across the Imjin — and the DMZ — into North Korea. If there were ever to be peace, the railroad tracks there could be reopened, and you could take a train from Seoul to, say, Paris.

Now it is a tourist site, a piece of South Korean history that, even Wednesday, was visited by schoolchildren. When these Olympics start, there will be no escaping the theme they studied there: the two countries that used to be one throwing their athletes together to compete as one, even as they remain wholly separate.

# PEXCE OLYMPICS

South Korea and North Korea are still technically at war; the 1950-53 war over the divided peninsula ending with an armistice and not a lasting peace treaty. But for a couple of hours Feb. 9 in PyeongChang, the two nations joined to march under a unified flag at the Winter Olympic Opening Ceremonies.

The Olympic flame was carried to celebrated South Korean figure skater Yuna Kim by two members of the unified Korean women's hockey team — Park Jong-ah from the South and Chung Su Hyon from the North. It was a fleeting gesture at a temporary location — PyeongChang Olympic Stadium, built specifically for these Games, will be torn down when they end — but it gave the Opening Ceremonies an air of permanent hope.



WANG ZHAO/AFP