

Lexi Youngberg

INVINCIBLE

A HORRIFYING BOAT ACCIDENT, AN UNTHINKABLE TRAGEDY, AND A 16-YEAR-OLD GIRL'S FIERCE DETERMINATION TO GET HER LIFE BACK **BY TIM NEVILLE**

The ear-splitting crash was so loud that the other boaters on Spring Lake heard it over the roar of their engines. Lexi Youngberg, 16, was riding on a small watercraft with two of her friends when suddenly a large motorboat collided with them. The boat smashed Lexi and her friends with its heavy hull, cutting them severely with its razor-sharp propeller.

It was a moment that nobody on Spring Lake that day would forget. For Lexi, it was the moment that changed her life forever.



**NARRATIVE
NONFICTION**
Reads like fiction—
but it's all true

ABLE



Lexi Youngberg takes a jog on her "cheetah foot," which is specially designed for running.

CRACK!

The day of the accident, September 5, 2009, was supposed to be the perfect end to the summer. In Lexi's hometown of Chicago, school had already started, but Lexi had returned to her family's cottage in Spring Lake, Michigan, for one last bit of warm-weather fun.

Lexi loved the outdoors and was an accomplished athlete. She was a runner, an ice skater, a skier, a wakesurfer, and a wakeboarder. She was also a star soccer player with a bright future on the field; her varsity soccer team had just won the state championships.

At about 7 p.m. that day, Lexi and her friends Robby, 15, and Kaitlin, 23, headed home from a ride on a Sea-Doo, a small watercraft that looks like a floating motorcycle. Suddenly, the Sea-Doo and a large motorboat driven by a 14-year-old boy slammed into each other. A thunderous CRACK! exploded across the lake. Boaters nearby knew immediately that

something was terribly wrong.

Michelle Foltyniewicz, 20, and her dad were the first boaters at the scene. What they found was truly horrifying. The boy in the motorboat was OK, and Kaitlin had only minor cuts. Robby, however, had been severely cut by the propeller. Lexi was floating facedown in the water, her shoulder pinned under the overturned Sea-Doo.

Without hesitating, Michelle threw on her life jacket, jumped overboard, and swam as fast as she could toward Lexi. She reached Lexi in seconds and quickly turned her over to find that Lexi was breathing, but she was unconscious, and her eyes were rolled back in her head. She had a deep cut on her skull, and her skin was deathly pale. And then Michelle saw it: The lower part of Lexi's left leg, just below the knee, had been completely severed.

Robby was in even worse shape. A doctor rode up in another boat and worked frantically

to save him, but it was too late. Robby died on the lake.

Consumed by Grief

During the collision, Lexi was hit on the head so hard that to this day, she does not remember the accident or what happened in the weeks that followed. She does not remember Michelle's father using a rope to tie a tourniquet around her stump to slow the bleeding. She does not remember being loaded into an ambulance and rushed to the hospital. She does not remember her heartbroken parents never leaving her side.

Over the next two weeks, Lexi underwent nine surgeries and survived an infection from the dirty lake water that nearly killed her. Meanwhile, her head injury made it difficult to remember things, so her parents had to tell her more than once that she had lost her leg.



ABOVE: Staying positive during a grueling physical therapy session
LEFT: Lexi gets a visit in the hospital from her friends. During her recovery, Lexi experienced phantom pain. She had feeling in her toes, even though her toes were gone. Doctors once thought phantom pain was psychological, but now they say these are real sensations that start in the spinal cord and brain.

The first time she heard about the accident, she cried and said she didn't understand why she had survived and Robby had died. When she looked at her swollen, stitched-up leg, she was consumed by grief. "I'll never be able to do anything again," Lexi told her mom.

But as the weeks passed, Lexi's memory began to improve. Her strength began to return. She found strength and comfort in her faith in God. Her life had been spared, she thought, and now it was up to her to make the most of it. So she made a decision: There would be no bitterness and no self-pity. It was time to put her life back together.

But how could she ever again do the things she loved? How could she play soccer with one leg?

Moving Parts

Today, more than 2.5 million amputees live in the United States. An amputee is a person who has lost all or part of an appendage, such as an arm or a leg. Many amputees wear artificial limbs called prostheses.

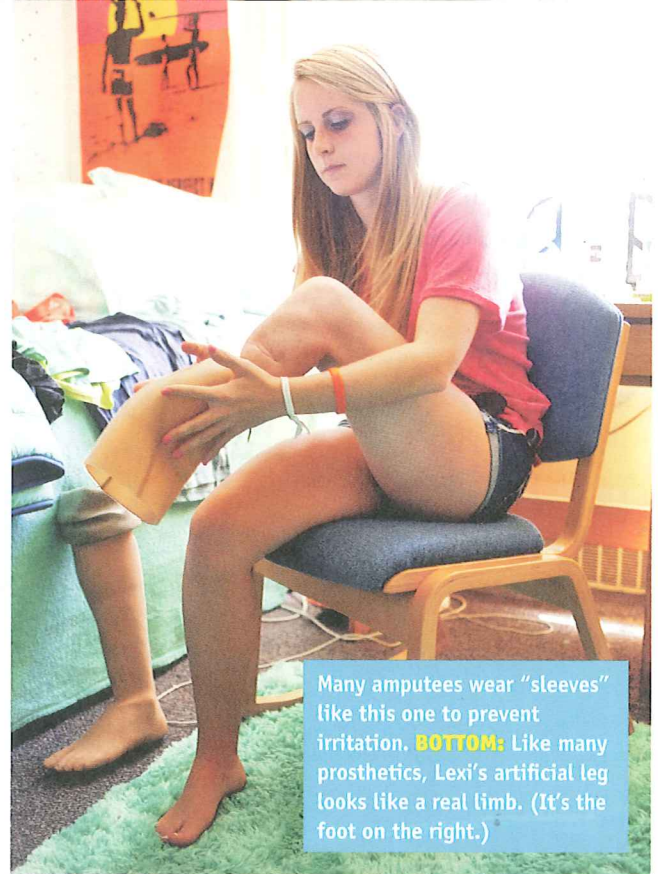
Doctors told Lexi that once the swelling in her stump went down, she would be fitted with her own prosthetic. It was hoped that this artificial lower leg and foot, which would attach to her knee, would enable her to walk without crutches.

That was easier said than done.

Fake limbs have been in use for thousands of years. In the Middle Ages, for example, knights who'd lost an arm in combat would strap on a leather and iron contraption that

could hold a shield, and they'd ride into battle. But it wasn't until the Civil War that prosthetic medicine, that is, the science of artificial limbs, really began to develop. More than 60,000 amputations were performed on soldiers in that war, leading to a booming industry in wooden legs and arms. These devices were often crude and painful to wear, however, and few amputees could lead truly independent lives.

Prosthetics have slowly improved since then, and in the past 10 years, numerous innovations in the field of prosthetic medicine have thoroughly transformed the experience of many amputees. This progress has been fueled by tragedy: Hundreds of American soldiers have lost limbs fighting wars in Iraq and Afghanistan. Determined to help these veterans, a new generation of scientists has revolutionized the field of prosthetics. Unlike the crude wooden pegs and metal hooks of the past, today's artificial limbs are designed to work—and even look—like the real thing. Some have



Many amputees wear "sleeves" like this one to prevent irritation. **BOTTOM:** Like many prosthetics, Lexi's artificial leg looks like a real limb. (It's the foot on the right.)



tiny computers that control them with absolute precision. Others are controlled by neural impulses, or brain waves, the same way real limbs are. On the leading edge are limbs with synthetic skin that feels warm to the touch.

Lexi's prosthetics would not include such Transformers-esque technology. But they would be designed to fit her body perfectly, to work without causing her additional pain, and, it was hoped, to help her be active and live as normal a life as possible.

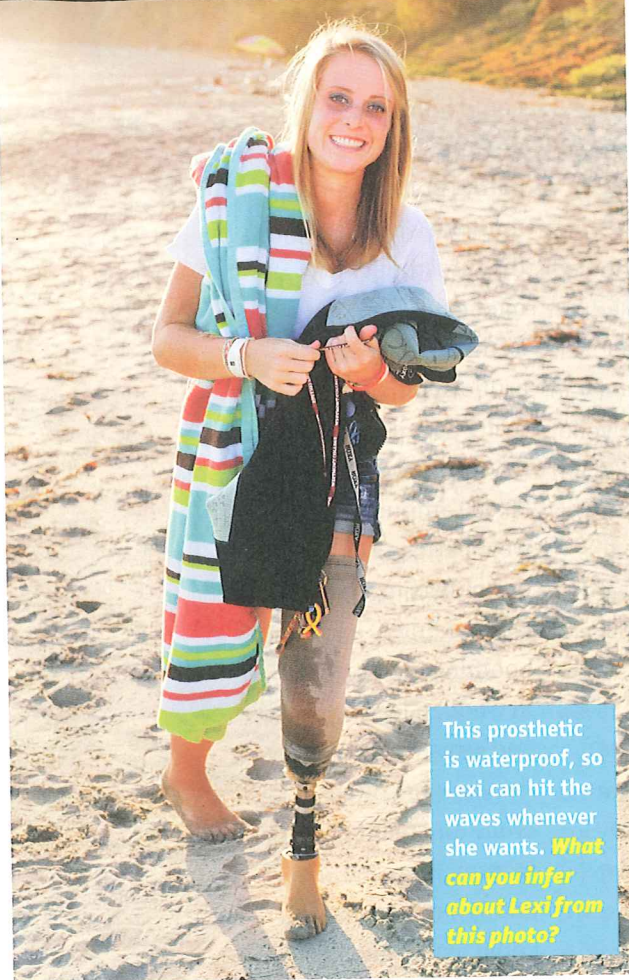
Lexi knew that a normal life was something she would never have again. Yet she wasn't going to let that stop her from getting back to the things she loved.

First Steps

By the end of November, Lexi was ready to get a prosthetic leg. Her doctor, David Rotter, fashioned a large suction cup that attaches just below the knee to the sides of what is left of her shin. This cup displaces the pressure of her weight away from the tender bottom of her stump. (The skin on her stump is not tough, like the skin on the heel of the foot, and putting weight directly on the stump would send bursts of debilitating pain up Lexi's spine.) The suction cup then attaches to a prosthetic leg.

Lexi has several types of legs: a water leg for swimming, showering, and wakeboarding, and an activity leg for daily wear and playing soccer. She even has a special leg for dressing up in high heels.

At first, Lexi found that just standing up on her artificial leg was exhausting. Everything seemed out of balance. Indeed amputees have to work much harder than other people to do the same tasks.



This prosthetic is waterproof, so Lexi can hit the waves whenever she wants. **What can you infer about Lexi from this photo?**

Lexi spent hours in physical therapy strengthening her body. She especially worked to build her abdominal muscles, which are key for walking. She treated these physical therapy sessions like intense training for a sport, and her hard work paid off. In December, barely three months after the accident, Lexi walked to her high school dance.

Forward Motion

It's been several years since the accident, and Lexi has moved on with

her life. She started school at Westmont College in Santa Barbara, California. She has a boyfriend. Incredibly, she is back to skiing, back to playing soccer, and back to running—though she still struggles with these activities. For amputees, rehabilitation is lifelong. “There are still obstacles and frustrations everyday,” says Lexi. “But I try my best and give it my all.”

Most days, when Lexi looks at the stump that used to be her leg, she feels gratitude. She's thankful that modern science has allowed her to keep doing the things she loves. Of course, Lexi still misses Robby, but she believes the best way to honor her friend is to live her life

to the fullest. “You can't ask yourself why this happened, because it will make you crazy,” she says. “People are inspired and given hope when you keep moving forward.”

So where is Lexi headed next?

One day, she hopes to become a physical therapist and work with other amputees. But first, she is training for the 2016 Paralympics, the Olympic Games for athletes with disabilities.

Wherever Lexi decides to go in life, one thing is certain: Nothing is going to get in her way. ●

REFLECTION

Resilience means “the ability to recover from or adjust to misfortune or change.” How does Lexi Youngberg demonstrate resilience? Use text evidence to support your answer.

"I Will Not Get Out of Heart Yet"

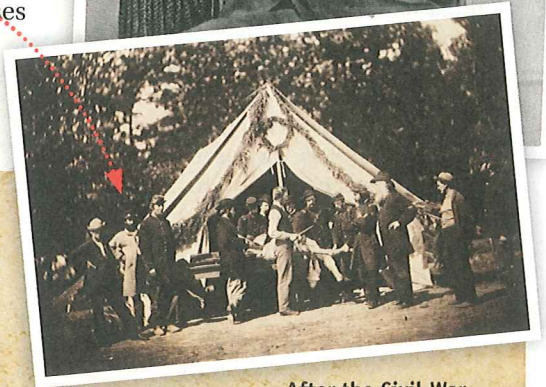
A Civil War veteran writes about life after amputation

BELOW: Like thousands of other Civil War soldiers, Brigadier General Stephen Joseph McGroarty lost an arm in battle.

During the Civil War (1861 to 1865), amputation was a grim fact of life. Soldiers shot in the arm or leg on the battlefield were highly likely to develop potentially fatal infections, and the only way to prevent a painful death was to cut off the damaged body part. Doctors operated in makeshift hospital tents, sometimes performing dozens of amputations a day.

By the end of the war, more than 60,000 soldiers were missing at least one limb. They had survived, but they faced a lifetime of challenges. In those days, prosthetics were crude contraptions—usually made of wood or steel—that were awkward and painful to wear.

Below you'll read an excerpt from a letter in which Civil War veteran Walter W. Lenoir discusses his prosthetic leg with his brother. ●



After the Civil War, doctors and scientists realized there was an overwhelming need for better prosthetics, and a new medical field was born: prosthetic medicine.

LETTER

Tucker's Barn Apr 8th 1863

Dear Brother,

. . . My leg is finished at last, and I have been using it for over a week. It is, I suppose, as good as they make 'em, but it is a wretched substitute for the one that I left in Virginia. It will take me a good while to become enough accustomed to it to know how it will do, as the skin and flesh where the weight is received will have to become hardened by degrees. At present I can't walk near as well with it as I could with the one Rufus made me; but as I learned that others had the same difficulty at first in using such legs I will not get out of heart yet. I will have to make up my mind however to take very little exercise and to do very little work, which goes hard when I think how much I ought to do. I am greatly pleased to find that I can ride with ease, though I will have to have a gentle and sure footed horse to ride in safety. I can sit, too, much more comfortably with the new leg than I could with the old one. . . . All as well as usual here, and were at the Fort day before yesterday, except Gwyn who had been quite sick but was better. Love to sister Lizzie. Good bye,

Your affectionate brother, W.W. Lenoir

PROSTHETICS OF TOMORROW

The bright and fascinating future of prosthetic medicine

PRINTABLE BODY PARTS

Imagine that your heart was damaged beyond repair. Bad news, right? Well someday, your doctor may be able to print you a new one! Welcome to the emerging field of "bioprinting." A bioprinter works kind of like a regular printer, except it prints living tissue using "ink" containing living cells. If this sounds more sci-fi than science, consider this: In February 2013, researchers at Cornell University in New York used cartilage cells from a cow to print a living ear. Scientists believe that someday, we may be able to print a wide range of living body parts.



THOUGHT-CONTROLLED ARMS

When you want to pick up a toothbrush, you simply think about grasping it and your arm, it seems, takes care of the rest. In the future, people with prosthetic arms will be able to do the same thing. Electrodes placed on a person's bones, nerves, or muscles will deliver instructions from the brain directly to the bionic arm. Similar prosthetic legs are already on the way. In 2012, amputee Zac Vawter tested one by climbing the 2,109 steps (103 stories!) of the Willis Tower in Chicago in only 45 minutes.



HANDS THAT FEEL AND HEAL

Researchers in Switzerland are developing a bionic hand that sends sensory information to the brain from all five fingertips, as well as from the palm and the wrist. In other words, they are creating a bionic hand that can actually feel. Meanwhile, scientists at Stanford University in California are developing a self-healing, synthetic skin that is sensitive to pressure.



SMART LEGS

Today, we have smartphones. Tomorrow, we'll have smart legs: bionic legs with computers in them. In fact, the first smart legs are already starting to appear. The Symbiotic Leg (pictured here) has a computer in the knee that helps it adjust to the terrain and anticipate the wearer's movement. If something goes wrong, the "stumble recovery" feature kicks in.

