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Outside the Lines



Code	adi-vid-01016
Title	Outside the Lines
Subtitle	Promise of a new Era in Sports
Description	Just as racing engineers squeeze the smallest advantage from high-performance machines, so too are scientists refining ways for humans to run faster, jump higher, endure longer...
Subject	ACES;Exercise Machine;Performance Analysis;Science;Sports
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Synopsis

The 21st century promises a new era in sports, with the potential for more productive and powerful athletes. Scientists are refining ways for humans to run faster, jump higher, and endure longer. The future may see the birth of super athletes, engineered to excel beyond current capabilities. This will be achieved through advanced training techniques and the potential unlocking of the genetic code.

However, there are debates about the limits of human performance. Some experts argue that there are finite limits to what the human body can achieve, while others believe we are still far from reaching our full potential.

Four essential components contribute to athletic achievement: the expanding pool of athletes, advanced training and coaching, perfected techniques, and improved equipment. The combination of these factors can lead to unprecedented athletic feats.



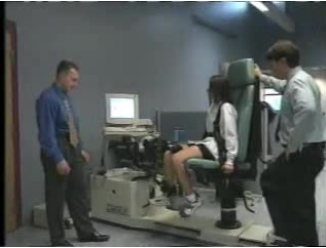



The future of sports will also see the integration of new technology, pushing the human body to new limits. The evolution of sports in the 21st century will be a fascinating journey, with the potential for athletes to achieve feats currently deemed impossible.





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Audio transcription

Frame	#	Time	Spoken text
	0.	00:00:00	Century donning with hope holds the promise of a new era in sports and the
	1.	00:00:05	birth of a more productive and powerful athlete. The ultimate specimen of the
	2.	00:00:10	human body. The human machine is the most complex machine on earth. Just as racing
	3.	00:00:17	engineers squeeze the smallest advantage from high-performance machines, so to our
	4.	00:00:21	scientists refining ways for humans to run faster, jump higher, endure longer.
	5.	00:00:28	In this hour, you will experience the cycle of life for an athlete in the
	6.	00:00:33	21st century, beginning before birth with science close to unleashing the power of
	7.	00:00:38	the genetic code. I think sometime in the future there will be ways to engineer
	8.	00:00:42	very super athletes that will make Michael Jordan look just fabulous.

Frame	#	Time	Spoken text
	9.	00:00:47	<i>How will such players reach their potential? Three current pro-athletes</i>
	10.	00:00:51	<i>sampled for us the futuristic training designed to shape the better body.</i>
	11.	00:00:58	<i>You have to find new ways to excel. Nothing stays the same. With this new</i>
	12.	00:01:03	<i>training, how far can we push human performance? The baseball I'm sure we can</i>
	13.	00:01:08	<i>go 130 miles an hour. And injuries in this brave new future may require not</i>
	14.	00:01:13	<i>rehab as much as a trip to the lab. Nunees? Sure. Grandma trees.</i>
	15.	00:01:20	<i>In the global era of sports, this new century means a new hotbed of elite</i>
	16.	00:01:25	<i>athletic talent. The amount of tall athletic people in that country with</i>
	17.	00:01:32	<i>abilities, it's awesome. TD's six million dollar man. How good would he be as a</i>
	18.	00:01:39	<i>professional athlete? It is entirely possible we may find out in the 21st</i>
	19.	00:01:43	<i>century. My daughter's lifetime, she will see man and machine completely welded</i>
	20.	00:01:48	<i>together. The future will be bigger, stronger, faster. Tonight, outside the</i>
	21.	00:01:55	<i>lines, the athlete of the 21st century.</i>
	22.	00:01:59	<i>If it is true at the beginning of the century that mankind has never had it</i>
	23.	00:02:19	<i>better, it's also obvious that athletes have never been faster or stronger, more</i>
	24.	00:02:23	<i>skilled or more prepared. And it's only going to get better. Now that's not a</i>
	25.	00:02:28	<i>prediction, that is fact based on science. And it's also food for a vigorous fan</i>
	26.	00:02:33	<i>debate. Sports is about stars and numbers. And we begin with Greg Garber</i>
	27.	00:02:37	<i>considering just how much better the best athletes can make those numbers</i>
	28.	00:02:41	<i>here in the 21st century. Today, Michael Johnson is one of track and field's</i>
	29.	00:02:47	<i>leading lights. He's the world record holder and the 200 meters at 19.32</i>
	30.	00:02:52	<i>seconds. But a century from now? 200 meters will be low 19, though. You know,</i>
	31.	00:02:58	<i>maybe 19, 2, maybe 19, 3. And what about Johnson's 400 meter world record of 43.18?</i>
	32.	00:03:05	<i>I think the 400 meters, I think, will be down to 42 flat. Well, I hate to tell</i>
	33.	00:03:09	<i>Michael this, but somebody will probably be under 40 seconds for that</i>
	34.	00:03:13	<i>competition, maybe 39, 38 seconds. Ray Stephanie is a sports statistical analyst</i>
	35.	00:03:18	<i>who specializes in track and field. He believes records will continue to fall</i>
	36.	00:03:23	<i>some dramatically in the next 100 years, including the 9.79 100 meter world</i>
	37.	00:03:29	<i>record of Maury Screen, the world's fastest human. I think it's very possible</i>
	38.	00:03:35	<i>it would be around nine seconds. It is the sweet curse of humanity to aspire</i>
	39.	00:03:40	<i>beyond our limits. Nowhere is this drive more clearly defined than in the bare</i>

Frame	#	Time	Spoken text
	40.	00:03:45	numbers of the athletic arena. But when does athletic possibility meet
	41.	00:03:51	physiological reality? Dr. Gideon Ariak, a leading expert in human performance,
	42.	00:03:57	insists there are finite limits. If you take a bone and you hang so much weight
	43.	00:04:02	on the bone, it will crack at some point. If you take a tendon or ligaments and you
	44.	00:04:06	pull it hard enough at one point, it will tear up. You cannot improve the
	45.	00:04:10	structural limitation of the DNA. If you put too many cars on the
	46.	00:04:15	broken bridge, at one point it will collapse. Ariel believes we've come close
	47.	00:04:20	to our limits in track and field. But in baseball, the baseball I think you
	48.	00:04:25	control, I'm sure that we can go 130 miles an hour. Come on harder. You can do
	49.	00:04:30	better. Come on harder, Ana. At Ball State University's Human Performance Lab,
	50.	00:04:34	Dr. Jeff Volek and Dr. Robert Newton study the limits of performance. No one
	51.	00:04:40	on his planet really can understand the full potential of the human body because
	52.	00:04:46	right now we have no computers despite our technology or robots or anything
	53.	00:04:53	that even comes close to the complexity of the human body. Individual performance
	54.	00:04:59	encompasses far more than mere flesh and blood. There are four essential
	55.	00:05:04	components to athletic achievement. First, the ever-expanding pool of athletes.
	56.	00:05:09	Look at how rapidly women's records improved as women came into the athletic
	57.	00:05:15	environment between the 50s and 70s and became socially acceptable for women to
	58.	00:05:20	be athletes. There may be people out there who have the potential to run
	59.	00:05:24	faster than the fastest man on earth. They've just never been discovered. The
	60.	00:05:28	second component is training and coaching. Fine-tuning the machine. Bob
	61.	00:05:32	Percy trains world-class athletes. Good athlete want to be trained properly, good
	62.	00:05:37	coach want to make sure an athlete is properly trained. But I have a model that
	63.	00:05:41	you got to be willing to pull every muscle in your body to win a gold medal.
	64.	00:05:44	The third element is technique, the ongoing search for perfection. How many
	65.	00:05:49	of these mistakes can I eliminate? So, you know, if you're hitting 100% of
	66.	00:05:53	everything perfect throughout that race, then who knows how much more you're
	67.	00:05:57	going to get from your performance? Who knows how much faster you're going to run?
	68.	00:06:01	The fourth is equipment, higher, faster, stronger by design. Think about the
	69.	00:06:07	track surfaces, the shoes that they have, swimming outfits, the lack of splash in
	70.	00:06:14	the pool. When all four components peak at the same moment, they can produce the
	71.	00:06:18	unprecedented. When Bob Beaman leaped 29 feet two and one-half inches in 1968,
	72.	00:06:24	he shattered the world record by nearly two feet. Unbelievable. No one ever
	73.	00:06:29	thought that that was going to happen in their lifetime. And as we like to say,

Frame	#	Time	Spoken text
	74.	00:06:33	<i>the person who breaks this world record, their parents haven't even been born</i>
	75.	00:06:36	<i>yet. That's being an ask. And yet, 23 years later, Mike Powell surpassed the</i>
	76.	00:06:43	<i>unsurpassable. Outjumping Beaman. I have no problems with saying the probably is</i>
	77.	00:06:48	<i>almost zero of outrageous things like a 50-foot pole vault or a 40-foot long</i>
	78.	00:06:55	<i>job. We can say the probability is between, oh, oh, oh, oh, one or some such</i>
	79.	00:06:59	<i>thing as that. But it's very dangerous to say zero. We are still an evolving</i>
	80.	00:07:04	<i>species and then all animals on the earth continue to evolve. I mean, who</i>
	81.	00:07:08	<i>knows where we'll be in a thousand years, what our form will be like. I don't</i>
	82.	00:07:11	<i>believe we've ever used our entire ability as human being. I think we're</i>
	83.	00:07:16	<i>probably not even within a 50 percentile ratio. You can't really</i>
	84.	00:07:21	<i>quantify that in terms of, you know, how much is left. No one knows how much is</i>
	85.	00:07:26	<i>left. We only know where we've been. Nobody knows where we're going.</i>
	86.	00:07:31	<i>Pushing the human body in this new century will require new technology. Next,</i>
	87.	00:07:35	<i>several of today's pro-athletes sample the training techniques of tomorrow.</i>

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