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Future Sport 1



Code	adi-vid-01143
Title	Future Sport 1
Subtitle	Future Sport with the greatest athletes
Subject	Performance Analysis
Duration	00:19:23
URL	https://arielweb.com/videos/play/adi-vid-01143
Date	2006-07-13 15:59:29
Label	Approved
Privacy	Public

Future Sports with Vic Braden

In this episode of Future Sports, host Vic Braden introduces viewers to the world of sports research and biomechanics. The show is filmed at the Cota Research Center, a world-renowned sports research facility located in Cota da Cosa, one hour south of Los Angeles. The director of the center, Dr. Gideon Ariel, is a leading expert in biomechanics.

The episode features an in-depth look at the science behind sports, with a focus on football and discus throwing. The show's guests include Rolf Vinerska, a place kicker for the San Diego Chargers, and Al Order, a 45-year-old discus thrower preparing for the 1984 Olympics.

Through biomechanical analysis, the show demonstrates how science can help athletes improve their performance. For example, Vinerska learns how a firm plant with his non-kicking leg can increase his kicking distance. Order, on the other hand, discusses how computer analysis has helped him understand and improve his throwing technique.





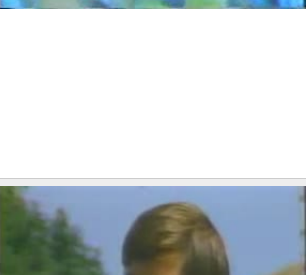


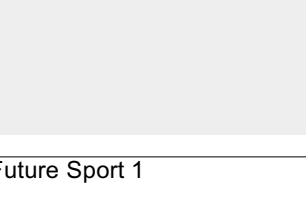
The episode also explores the future of sports, with discussions on the potential use of computers and holography in training and performance analysis. However, both Braden and his guests emphasize the importance of maintaining a balance between science and the art of sports, cautioning against invasive methods such as implanting chips in athletes' bodies.



Future episodes of Future Sports promise to feature more exciting sports information, including segments on the U.S. women's Olympic volleyball team, triathlon superstar Scott Tinley, and former heavyweight boxer Ken Norton, among others.

Model Id: gpt-4-0613
 Created on: 2023-09-19 02:29:50
 Processing time: 00:00:29.2390000
 Total tokens: 4235







Audio transcription

Frame	#	Time	Spoken text
	0.	00:00:00	Thanks, Steve, I appreciate it, buddy. It's a lot of fun. Hi, I'm Vic Braden. You probably
	1.	00:00:13	know me from tennis, but the fact is I've been involved in sports research and other
	2.	00:00:17	sports for a long, long time. I think I'm going to get a chance to show you a side of
	3.	00:00:21	me that you have not seen before. But what's really fun for me is I'm going to get a chance
	4.	00:00:25	to show you a side of sport that I don't think you have ever seen before. So, welcome to
	5.	00:00:31	my home and welcome to Future Sports. We're at beautiful Cota da Cosa, located one hour
	6.	00:00:38	south of Los Angeles in the beautiful Saddleback Mountains. Cota da Cosa is the site of the

Frame	#	Time	Spoken text
	7.	00:00:43	<i>Cota Research Center, founded in 1976 and completed in 1980. The director of the Cota</i>
	8.	00:00:50	<i>Research Center is Dr. Gideon Ariel, recognized as the world leader in biomechanics. The</i>
	9.	00:00:57	<i>world's</i>
	10.	00:01:02	<i>top athletes assemble on a regular basis at the Center for Quick Checkup on Dr. Ariel's</i>
	11.	00:01:07	<i>amazing computer, which carefully identifies each athlete's movements and quantifies all</i>
	12.	00:01:13	<i>forces. Sounds complicated, but Dr. Ariel has made it simple and practical. On future</i>
	13.	00:01:20	<i>sport, we'll take a look at athletes representing the complete spectrum of sport.</i>
	14.	00:01:49	<i>On today's edition of Future Sport, you'll learn the place-taking secret to San Diego</i>
	15.	00:01:56	<i>Chargers, Rolf Vinerska, the man with the best place-taking percentage in the NFL. And</i>
	16.	00:02:02	<i>we'll meet the ageless Al Order, the man at 45 years of age who's preparing for the 1984</i>
	17.	00:02:19	<i>Olympics. All today on Future Sport, a celebration of the athlete, the mind, and</i>
	18.	00:02:37	<i>technology.</i>
	19.	00:02:52	<i>Welcome back to Future Sport. Professional football, the most popular sport in America.</i>
	20.	00:02:58	<i>Running backs and quarterbacks get the headlines, but the one player who always seems</i>
	21.	00:03:08	<i>to be there</i>
	22.	00:03:12	<i>when the big game's on the line, the place kicker. On his foot often rides a difference</i>
	23.	00:03:17	<i>between victory or defeat. Hello, everybody. You know we have tremendous athletes</i>
	24.	00:03:22	<i>come to future</i>
	25.	00:03:27	<i>sport, and we are tickled to death to get the big names. Rolf Vinerska of the San Diego</i>
	26.	00:03:33	<i>Chargers,</i>
	27.	00:03:38	<i>the place kicker deluxe. Rolf, delighted to have you with us. It's fun to come up here, Vic,</i>
	28.	00:03:45	<i>and see</i>
	29.	00:03:50	<i>how this all works. Got a lot of questions to ask you, coach. We want to know how</i>
	30.	00:03:54	<i>scientific is</i>
	31.	00:03:59	<i>football getting now? I think it's getting real scientific. It starts with the scouting of players</i>
	32.	00:03:59	<i>in college. There are very few players, no matter what school you go to, no matter how</i>
	33.	00:03:59	<i>small, that</i>
	34.	00:03:59	<i>can get by the pro scouts and the science that they use in grading those athletes. It gets</i>
	35.	00:03:59	<i>carried</i>
	36.	00:03:59	<i>over to game preparation, studying other teams' defenses, offenses, tendencies, and I</i>
	37.	00:03:59	<i>think it</i>
	38.	00:03:59	<i>probably gets into evaluating players when players are picked to make a team. Well, we're</i>
	39.	00:03:59	<i>going to</i>
	40.	00:03:59	<i>get into an awful lot of the scientific aspect of sport. Right now, I want to know how much</i>
	41.	00:03:59	<i>does the</i>
	42.	00:03:59	<i>mental part play in this game? It applies to how you handle the ups and downs, and as a</i>
	43.	00:03:59	<i>kicker that</i>
	44.	00:03:59	<i>has faced situations where you've missed critical kicks and know that you have to come</i>
	45.	00:03:59	<i>back and may</i>
	46.	00:03:59	<i>get another chance in the same game to redeem yourself, you have to be able to keep</i>
	47.	00:03:59	<i>your head</i>
	48.	00:03:59	<i>mentally in it. Rolf, is soccer style kicking then the wave of the future? If you look in the</i>
	49.	00:03:59	<i>pros,</i>
	50.	00:03:59	<i>it's a clear trend away from the conventional style kicking, and we're gonna talk about</i>
	51.	00:03:59	<i>some</i>
	52.	00:03:59	<i>of the reasons later, but I think visually, without looking at the mechanics of it,</i>
	53.	00:03:59	<i>you can say that a conventional style kicker has a smaller area on his toe to kick it. If the</i>
	54.	00:03:59	<i>ball</i>
	55.	00:03:59	<i>is poorly placed, he has less of a chance to adapt. I personally think that you don't get as</i>

Frame	#	Time	Spoken text
	38.	00:04:36	<i>many joints involved, and so you can't generate the foot head speed, and therefore can't kick it</i>
	39.	00:04:40	<i>as far as a soccer style kicker, so I think there are reasons why the soccer style kickers have</i>
	40.	00:04:44	<i>evolved in the NFL. You know what's so nice about science? We can tell. Harvard University's</i>
	41.	00:04:50	<i>place kicker Joe Abbot was a recent visitor to the Kota Research Center. His problem was classic</i>
	42.	00:04:54	<i>among place kickers of all levels. How to increase distance without losing accuracy. So we took Joe</i>
	43.	00:05:01	<i>through a complete program of biomechanical training, and after extensive work with computers,</i>
	44.	00:05:06	<i>force plate analysis, and so on, it was clearly demonstrated that one key to kicking improvement</i>
	45.	00:05:11	<i>is a firm plant or stop with a non-kicking leg, and we're gonna do the same thing to you, Rolf.</i>
	46.	00:05:19	<i>Earlier this week, we did some biomechanical analysis of Rolf, and now he's gonna get a</i>
	47.	00:05:25	<i>chance to see what he really looks like when he just used his skeleton. I hope this doesn't prove</i>
	48.	00:05:30	<i>that I should never have gotten past high school football. Let's take a look. By photographing</i>
	49.	00:05:35	<i>several of Rolf's kicks on high-speed film from 100 frames a second, sometimes up to 10,000 frames</i>
	50.	00:05:41	<i>a second, and then analyzing that film with computers, we were able to diagnose Rolf's</i>
	51.	00:05:46	<i>kicking motion. Dr. Ariel explains the process of digitization. This little pen is the key to</i>
	52.	00:05:53	<i>digitizing. Every time you touch with this pen, this sensitive screen, the information going right</i>
	53.	00:06:01	<i>to the computer. With us here is Dr. Ann Penny. She is going to digitize Rolf in his kicking</i>
	54.	00:06:08	<i>process. Every time she touching the digitizer, the information on location of this point is going</i>
	55.	00:06:14	<i>directly to our computer. Our computer can do all the calculation to find out how much the segments</i>
	56.	00:06:21	<i>move, how fast they move, how they accelerate or decelerate, how much energy was lost or was gained,</i>
	57.	00:06:28	<i>all the information that Future Sport athletic will use in order to increase performance in the</i>
	58.	00:06:35	<i>future. What we see here is Rolf making an advance forward and abruptly stop with the non-kicking</i>
	59.	00:06:42	<i>leg. This abrupt stop actually transfer energy to the kicking leg and by that enabling Rolf to kick</i>
	60.	00:06:50	<i>farther. The objectives of the kicker is running forward, utilize this energy and abruptly stop the</i>
	61.	00:06:58	<i>leg so we can transfer the energy to the kicking leg. Let's look on it in a multiple image. Here</i>
	62.	00:07:04	<i>you see the non-kicking leg moving but at that point it abruptly stop and that's what make the</i>
	63.	00:07:10	<i>other leg snap into the ball. So Vic, the key to kicking is the non-kicking leg. You know Rolf,</i>
	64.	00:07:18	<i>it's amazing to me when you see that biomechanical analysis to find out how important the left leg</i>
	65.	00:07:23	<i>is even if you're a right-footed kicker. You know you're right, I always knew it was important and I</i>
	66.	00:07:27	<i>knew that if it was a wet grass field that I would have a hard time kicking but now I really understand</i>
	67.	00:07:32	<i>why. You know talking about a wet field if you're slipping you're in deep trouble because again</i>
	68.	00:07:37	<i>earlier this week we were able to measure all the forces that you transmit through the ground. Let's</i>

Frame	#	Time	Spoken text
	69.	00:07:42	take a look at what we found out on the force plate. Okay. And while Gideon was inside on the
	70.	00:07:47	monitor checking things out we had you on the force plate trying to discover how many forces
	71.	00:07:52	you could transmit through the ground. Let's take a look at what Gideon discovered. As you can see Vic,
	72.	00:07:58	Rolf generated a tremendous amount of force with the non-kicking leg. He transferred over 500 pounds
	73.	00:08:05	of force more than two and a half times his body weight from his left foot to the right. The average
	74.	00:08:11	kicker would transfer maybe 300 pounds or a little bit more than that. The amazing phenomena about
	75.	00:08:19	Rolf that is very consistent is like a signature. Anybody that tried to sign his name always it
	76.	00:08:26	looks the same. With Rolf every time he kicking the ball it looks exactly the same. He's within
	77.	00:08:32	1% of the previous kick and that's what makes a great kicker. You skinny little runt that's
	78.	00:08:40	amazing to me. I mean 500 and some pounds on the left foot that's amazing. You know what's amazing
	79.	00:08:45	to me is that it's the left foot not the right and the fact that I could kick it just about as
	80.	00:08:50	far if I didn't have big muscles on my right leg. Yeah it's just so the mass is the same absolutely.
	81.	00:08:56	But you know something computers you said it before garbage in garbage out they don't measure
	82.	00:09:01	motivation don't measure anything. Let's take a hypothetical situation. Monday night football
	83.	00:09:05	Howard Cosell at the mic. You got 50 million people around the country watching the doggone
	84.	00:09:11	ballgame. You're down to about two seconds left this kick you win or lose baby and you got those
	85.	00:09:15	guys coming at you each guy wants to eat you alive. 330 pounds now what does biomechanics do
	86.	00:09:20	for you? I guarantee you don't start thinking about force vectors and that sort of thing. What
	87.	00:09:25	you really do is I think you visualize the kick on the sidelines I know you're big into that I
	88.	00:09:29	spend a lot of time on the sidelines thinking about it but when you get on the field it becomes
	89.	00:09:34	real physical you look for a good spot you want to have a good plant spot you want to maybe have
	90.	00:09:38	a little higher area for them to put the ball on and then you just kick it you try to free your
	91.	00:09:43	mind up you don't want your mind to control your body and you just go out there and kick it the
	92.	00:09:47	minute you start to try to guide the ball with your mind the minute you can start to miss. Have
	93.	00:09:52	you ever missed? Once or twice but you know I'm just happy to be doing this again because there
	94.	00:09:56	was a while a couple of years ago when when playing football was never in my future. Rolf
	95.	00:10:01	Panerska three years ago nearly died of Crohn's disease now an NFL star. From football legs to
	96.	00:10:10	Olympic legs these belong to perhaps the greatest Olympian in history.
	97.	00:10:22	Welcome back to beautiful Coto de Caza. With us now on Future Sport the man who really made
	98.	00:10:35	history with the discus and still setting the pace Al Order 45 year old discus genius who still
	99.	00:10:42	is a threat to everybody in the world and Dr. Gideon Ariel. Al delighted to have you on the show

Frame	#	Time	Spoken text
	100.	00:10:46	<i>obviously but why is a guy 45 years old throwing the discus and why are you still beating most of</i>
	101.	00:10:51	<i>the people in the world? I've yet to figure that out but I enjoy it. I've always had a philosophy</i>
	102.	00:10:59	<i>that you don't have to go out and win everything as long as you enjoy it and you work hard you</i>
	103.	00:11:03	<i>know the capability evolves and that normally takes care of the winning kind of thing. I</i>
	104.	00:11:07	<i>absolutely enjoy throwing I'm going to be throwing for another 25 years. Gideon 45 years of age I've</i>
	105.	00:11:13	<i>alluded to that and yet a couple years ago he had a combination of three of the best throws. Are we</i>
	106.	00:11:18	<i>beginning to shrink chronological and biological age are we beginning to expand the difference? Our</i>
	107.	00:11:23	<i>body going by our genetic capabilities and apparently at the age of 45 you don't have to</i>
	108.	00:11:29	<i>say I'm old man as far as I'm concerned AI right now is probably 25 26 years old biologically what</i>
	109.	00:11:36	<i>chronologically that's that's for the birds. Did you know about AI before you started throwing? AI was my idol in</i>
	110.	00:11:43	<i>fact in the kibbutz in Israel I had his picture above my bed every morning I would I would</i>
	111.	00:11:48	<i>worship I mean thousands years ago they would kill me they would say that I I worship idols</i>
	112.	00:11:54	<i>you know but he was my idol for many many years from 1955. All right AI it's time for you. That's a long time ago. That's right you're getting older you're getting younger AI you have a</i>
	113.	00:12:05	<i>scientific interest where'd that come from? Well I've been in computers now for oh 20 21 years or</i>
	114.	00:12:11	<i>something like that and when I started back into competition I have an eight I had an eight year</i>
	115.	00:12:15	<i>layoff from 1968 through 76 and when I started back I thought I might as well learn as much as I</i>
	116.	00:12:21	<i>can about the throw and I hooked up with Gideon immediately to find out exactly what I was doing</i>
	117.	00:12:27	<i>wrong. Why not take advantage of all of the innovations that occurred through that eight</i>
	118.	00:12:31	<i>year span and I think the computer analysis of the technique and in my event was absolutely the</i>
	119.	00:12:37	<i>most important thing I could determine for the first time what coaches were trying to tell me I</i>
	120.	00:12:41	<i>could see quantitatively where I was accelerating decelerating all these kinds of things and in</i>
	121.	00:12:46	<i>going through that analysis I was able then to launch into my kind of newfound career okay with</i>
	122.	00:12:51	<i>new enthusiasm and knowing what I was doing. AI to understand the future we have to understand</i>
	123.	00:12:55	<i>the past unfortunately or fortunately you're the past and the present and the future now where are</i>
	124.	00:13:01	<i>we going to go with this game? I think the computer analysis will continue I think we'll get</i>
	125.	00:13:06	<i>into very shortly an area where athletes will be able to almost step inside themselves we'll have</i>
	126.	00:13:13	<i>computers simulating what the perfect throw will be and throwers will be in effect able to enter</i>
	127.	00:13:18	<i>their own image created by film by computers and as they execute the throw if an arm goes out too</i>
	128.	00:13:24	<i>far a head tilts or something there'll be an alarm go off and say you're you're changing. So feedback</i>
	129.	00:13:29	<i>systems and computers are going to be very important you see that Gideon? Well hologram</i>

Frame	#	Time	Spoken text
	130.	00:13:34	<i>is the thing of the future and I tell you I'm learning from AI more than he learned from me</i>
	131.	00:13:38	<i>but he's the head of the game all the time because he really talked about the the future we talking</i>
	132.	00:13:43	<i>about holography now where you will have the ideal model that you actually will see you cannot touch</i>
	133.	00:13:48	<i>it because you see it but you cannot touch it but you can put your body right in it and every time</i>
	134.	00:13:53	<i>you depart from efficiency either you will have some kind of feedback an alarm system or I don't</i>
	135.	00:13:59	<i>know maybe in East Germany they'll give you a 220. There are things that are a little frightening</i>
	136.	00:14:04	<i>about the the entire environment of computer introduction at the sport because computers you</i>
	137.	00:14:09	<i>know ten years ago I couldn't lift computers that you know right now I hold in the palm of my hand</i>
	138.	00:14:13	<i>very easily and why not in the future be able to implant computers within an athlete and through</i>
	139.	00:14:19	<i>telemetry exercise that athlete because the thing that prevents a runner from going very fast is his</i>
	140.	00:14:24	<i>brain and through through telemetry you can override that that that brain feedback that says</i>
	141.	00:14:29	<i>I think I'm going to fast run fatigue you can override that with computer implants that are</i>
	142.	00:14:33	<i>stimulating various muscle groups that's right because then we're into robotics. Well is that</i>
	143.	00:14:39	<i>going to be legal you see a lot of changes taking place in the Olympic rules etc. Oh it's the</i>
	144.	00:14:44	<i>technology is here today certainly there's going to have to be a way of combating it because then</i>
	145.	00:14:48	<i>you'll have coaches up in the stands okay with telemetry little telemetry straight stations</i>
	146.	00:14:52	<i>activating their athletes there obviously has to be a stop to that how you do it is through some</i>
	147.	00:14:56	<i>kind of body scan. AI I hundred percent agree with you because we are here dealing with a balance</i>
	148.	00:15:02	<i>between art and science and when one taking over you have you have a situation which is really a</i>
	149.	00:15:07	<i>non athletics anymore and we should use science to amplify our our mind in a in a way where you</i>
	150.	00:15:15	<i>can perform the best but you should be in a non-invasive method we should never implant</i>
	151.	00:15:19	<i>chips in our body we should never take drugs we should do it as natural as possible to achieve</i>
	152.	00:15:24	<i>our maximum. Sure just enhance the an athlete's capability to exercise more efficiently to be</i>
	153.	00:15:31	<i>more productive in his in his training environment that's what we want. But we should really be alert</i>
	154.	00:15:36	<i>because so many new things are happening sports changing and we're only going to control the</i>
	155.	00:15:41	<i>future by doing something now and if we're not thinking ahead we're gonna be a little bit of</i>
	156.	00:15:46	<i>trouble but anyway AI it's great having you here. Thank you very much. Future sport continues in a</i>
	157.	00:16:03	<i>moment. We've got tons of exciting sports information coming up on Future Sport so let's</i>
	158.	00:16:19	<i>take a quick look at some of the segments you'll see on future edition. We'll visit with the United</i>
	159.	00:16:25	<i>States women's Olympic volleyball team they're looking for 84 gold. From the shores of Hawaii</i>
	160.	00:16:31	<i>you'll meet triathlon superstar Scott Tinley. No one can beat this man in the hurdles and we'll</i>
	161.	00:16:36	<i>find out why. And the cannonball tennis serve of Roscoe Tanner will be coming right at you. Ann</i>
	162.	00:16:44	<i>Meyers the only woman ever drafted by the NBA will be our guest. And speaking of the NBA rookie</i>

Frame	#	Time	Spoken text	
	163.	00:16:51	<i>of the year Buck Williams will join us. Along with 1968 Olympic gift Kaplan champion the courageous</i>	
	164.	00:16:58	<i>Bill Toomey. You'll meet gymnastic champion Sharon Shapiro. And this man former heavyweight</i>	
	165.	00:17:04	<i>boxer Ken Norton. Television sports journalist Charlie Jones hits the golf links and compares</i>	
	166.	00:17:09	<i>strokes with the smooth swinging Jerry Pate. We'll also take a special look at superstars</i>	
	167.	00:17:15	<i>who aren't quite as famous but just as important. Ryan O'Field's awesome strength will amaze you. And</i>	
	168.	00:17:22	<i>you'll meet pole vault great Bob Segrin who dominated television superstars. You'll visit</i>	
	169.	00:17:28	<i>with today's youth. And because there can be no future without understanding the past you'll meet</i>	
		170.	00:17:34	<i>yesterday's greatest champion. Olympic champion and Future Sports running advisor Frank Shorter</i>
		171.	00:17:41	<i>will be a regular guest. Along with our resident computer expert Dr. Gideon Ariel. He'll present</i>
172.		00:17:48	<i>the science of sports in a way you have never seen before. We'll be back with a wrap-up of</i>	
173.		00:17:55	<i>this edition of Future Sports right after this. We get a lot of letters people saying how do we</i>	
	174.	00:18:07	<i>get that information you guys are pumping out in sports research at Dakota Research Center.</i>	
	175.	00:18:11	<i>Finally we get our forum buddy we're gonna get a chance to tell those people and they're gonna</i>	
	176.	00:18:15	<i>get a chance to take a shot at us. We are going to tell the story that the American technology is</i>	
	177.	00:18:20	<i>the best technology in the world. Best technology in the world and you're gonna get a chance to see</i>	
	178.	00:18:25	<i>a heck of a lot of it on later editions of Future Sports. This is Vic Braden for Gideon Ariel saying</i>	
	179.	00:18:30	<i>so long.</i>	
	180.	00:18:45	<i>The executive producer of Future Sport is Jim Millman produced by Jim Cross.</i>	
	181.	00:19:15	<i>you</i>	

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Video filename: **adi-vid-01143-future-sport-1-256kbps.mp4**

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