



Ariel Dynamics Inc. Media Library - Video

Future Sport



Code	adi-vid-01014
Title	Future Sport
Subtitle	A series of 13 shows on ESPN
Description	Sports analysis in the Coto Research Center.
Subject	Performance Analysis;Science;Sports
Duration	00:49:14
URL	https://arielweb.com/videos/play/adi-vid-01014
Date	2013-01-16 15:40:37
Label	Approved
Privacy	Public

Video Synopsis

The video takes place at the Coto de Caza, home to the Coto Research Center, directed by Dr. Gideon Ariel, a world leader in Biomechanique. The center uses advanced technology to analyze athletes' movements and quantify forces, aiding in performance enhancement.

The video features a segment on Future Sports, where athletes from various sports are analyzed. The first athlete featured is Rolf Bernersky, a professional football player from the San Diego Chargers. His kicking motion is analyzed using high-speed film and computer technology. The analysis reveals that the abrupt stop of the non-kicking leg transfers energy to the kicking leg, enhancing the kick's power.

The video also features Al Water, a 45-year-old discus thrower who continues to compete at a high level. He attributes his success to his enjoyment of the sport and his use of computer analysis to improve his technique. He believes that future advancements in computer technology will allow athletes to simulate the perfect throw and receive immediate feedback on their performance.

Dr. Ariel agrees with Water's predictions, suggesting that the integration of feedback systems and computers will play a significant role in future sports training and performance enhancement.

Video Synopsis

The video discusses the future of sports, focusing on the integration of technology and science into athletic training and performance. The speakers discuss the potential of holography in sports, where an ideal model of an athlete's performance can be created and monitored for efficiency. They also discuss the possibility of implanting computers within athletes to override brain feedback and stimulate muscle groups, although they agree that this should be non-invasive and not involve drugs.

The video also features interviews with various athletes and sports professionals. Frank Shorter, a marathoner, discusses the importance of form and biomechanics in running. Dr. Arie Selinger, a volleyball coach, talks about the use of biomechanical analysis in training. Gideon Ariel, a sports scientist, demonstrates how computer technology can be used to analyze and improve an athlete's performance.

The video concludes with a discussion on the importance of understanding one's body in relation to the task in gymnastics, featuring an interview with Sharon Shapiro, a gymnastics champion.

Future Sport with Gideon Ariel

In this episode of Future Sport, Gideon Ariel and his team use advanced computer technology to analyze the performance of various athletes and provide insights on how they can improve.


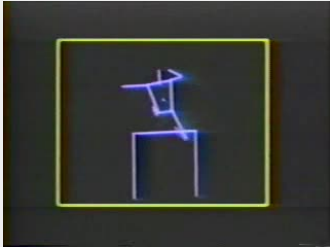



- The episode starts with an analysis of gymnast Sharon Shapiro's performance. The team uses a central gravity dot to track her movements and suggests that raising her central gravity by two inches could improve her stand.
- The show then moves on to golf, where they use aerospace technology and computers to compare the swings of Charlie








Jones and US Open winner Jerry Pay. The analysis reveals that Pay turns his body more than Jones, allowing him to transmit more energy to the ball.






- The episode also features an analysis of weightlifter Franco Colombo's performance. The team uses a new weight training device that adjusts to the user's body and is regulated by a computer.
- The show also features an analysis of boxer Ken Norton's performance. The team measures the forces Norton exerts with his jab and finds that he generates 349 pounds of force on the ground.
- The episode concludes with a discussion on the importance of shoes in athletic performance. The team suggests that future sports technology will focus on designing the most sophisticated shoes for athletes.

Guests on the show include Sharon Shapiro, Charlie Jones, Franco Colombo, and Ken Norton.





Audio transcription






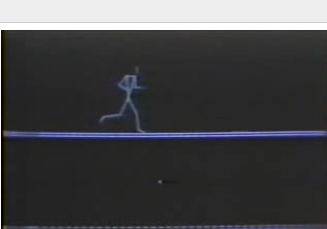
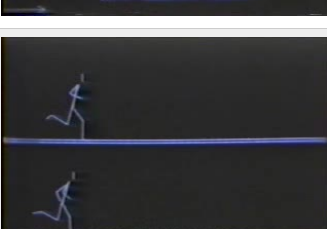
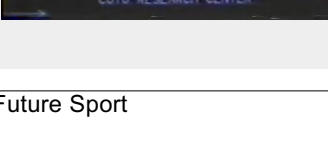
Frame	#	Time	Spoken text
	0.	00:00:00	<i>We're at beautiful Coto de Caza, located one hour south of Los Angeles in the beautiful</i>
	1.	00:00:09	<i>Saddleback Mountains.</i>
	2.	00:00:11	<i>Coto de Caza is the site of the Coto Research Center, founded in 1976 and completed in 1980.</i>
	3.	00:00:18	<i>The director of the Coto Research Center is Dr. Gideon Ariel, recognized as a world</i>
	4.	00:00:23	<i>leader in Biomechanique.</i>
	5.	00:00:25	<i>The world's top athlete, the symbol on a regular basis at the center for quick check-up</i>
	6.	00:00:29	<i>on Dr. Ariel's amazing computer, which carefully identifies each athlete's movement and quantifies</i>
	7.	00:00:35	<i>all forces.</i>
	8.	00:00:36	<i>It sounds complicated, but Dr. Ariel is made it simple and practical.</i>
	9.	00:00:41	<i>On Future Sports, we'll take a look at athletes representing the complete spectrum of sports.</i>
	10.	00:00:55	<i>Professional football, the most popular sport in America.</i>
	11.	00:01:19	<i>Running back some quarterbacks get the headlines, but the one player who always seems to be</i>
	12.	00:01:32	<i>there when the big game's on the line, the play's kicker, on his foot often rides a</i>
	13.	00:01:38	<i>difference between victory or defeat.</i>
	14.	00:01:41	<i>Hello, everybody, you know we have tremendous athletes come to Future Sport and we are</i>
	15.	00:01:48	<i>particularly deaf, they get the big names, Rolf Bernersky of the San Diego Chargers,</i>
	16.	00:01:52	<i>the play's kicker deluxe, they're all delighted to have you with us.</i>
	17.	00:01:55	<i>I'm going to come up here and see how this all works.</i>
	18.	00:01:58	<i>I hope this doesn't prove that I should never have gotten past high school football.</i>
	19.	00:02:02	<i>Let's take a look.</i>
	20.	00:02:03	<i>By photographing several of Rolf's kicks on high speed film, from 100 frames a second</i>
	21.	00:02:08	<i>sometimes up to 10,000 frames a second, and then analyzing that film with computers,</i>
	22.	00:02:13	<i>we're able to diagnose Rolf's kicking motion, and Dr. Ariel explains the process</i>
	23.	00:02:18	<i>of digitization.</i>
	24.	00:02:19	<i>This little fan is the key to digitizing.</i>
	25.	00:02:24	<i>Every time you touch with this fan, this sensitive screen, the information going right</i>
	26.	00:02:29	<i>to the computer.</i>
	27.	00:02:30	<i>With us here is Dr. Ann Penny, she is going to digitize Rolf in his kicking process.</i>

Frame	#	Time	Spoken text
	28.	00:02:38	<i>Only time she touching the digitizer, the information on location of these points going</i>
	29.	00:02:43	<i>directly to our computer, our computer can do all the calculation to find out how much</i>
	30.	00:02:49	<i>the segments move, how fast they move, how they accelerate or decelerate, how much energy</i>
	31.	00:02:55	<i>was lost or was gained, all the information that Future Sport athletic will use in order</i>
	32.	00:03:02	<i>to increase performance in the future.</i>
	33.	00:03:05	<i>What we see here is Rolf making an advance forward and abruptly stop with the non-kicking</i>
	34.	00:03:11	<i>leg.</i>
	35.	00:03:12	<i>This abrupt stop actually transfers energy to the kicking leg and by that enabling Rolf</i>
	36.	00:03:18	<i>to kick further.</i>
	37.	00:03:20	<i>The objectives of the kick care is running forward, utilize this energy and abruptly</i>
	38.	00:03:26	<i>stop the leg so we can transfer the energy to the kicking leg.</i>
	39.	00:03:31	<i>Let's look on it in a multiple image.</i>
	40.	00:03:33	<i>Until you see the non-kicking leg moving but at that point it abruptly stops and that</i>
	41.	00:03:38	<i>will make the other leg snap into the ball.</i>
	42.	00:03:42	<i>So Vic, the key to kicking is the non-kicking leg.</i>
	43.	00:03:47	<i>You know Rolf it's amazing to me when you see that biomechanical analysis to find out</i>
	44.	00:03:50	<i>how important the left leg is even if you are right put in kicking.</i>
	45.	00:03:54	<i>You know you're right, I always knew it was important and I knew that if it was a wet</i>
	46.	00:03:57	<i>grass field that I would have a hard time kicking but now I really understand why.</i>
	47.	00:04:01	<i>From football legs to Olympic legs.</i>
	48.	00:04:04	<i>These belong to perhaps the greatest Olympian in history.</i>
	49.	00:04:16	<i>My name is Al Water.</i>
	50.	00:04:17	<i>I've been in computers for about 22 years now and I think I've always realized that</i>
	51.	00:04:22	<i>there would be the potential for the computer in athletics.</i>
	52.	00:04:26	<i>We've gone through micro computers and mini computers and now that we're developing computer</i>
	53.	00:04:31	<i>chips with sophisticated computing capabilities we're going to see a large introduction in</i>




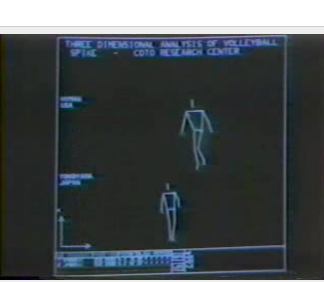


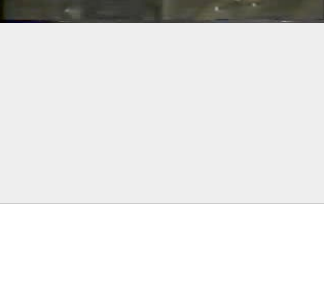

Frame	#	Time	Spoken text
	54.	00:04:36	<i>the sport.</i>
	55.	00:04:37	<i>Welcome to Future Sport.</i>
	56.	00:04:39	<i>With us now on Future Sport the man who really made history with the discus and still setting</i>
	57.	00:04:45	<i>the pace.</i>
	58.	00:04:46	<i>Al Water, 45 year old discus genius who still is a threat to everybody in the world and</i>
	59.	00:04:51	<i>Dr. Gideon Ariel.</i>
	60.	00:04:52	<i>Al, I'm delighted to have you on the show obviously but why is a guy 45 years old throwing the</i>
	61.	00:04:57	<i>discus and why are you still beating most of the people in the world?</i>
	62.	00:05:01	<i>I've yet to figure that out but I enjoy it.</i>
	63.	00:05:05	<i>I've always had a philosophy that you don't have to go out and win everything as long</i>
	64.	00:05:09	<i>as you enjoy it and you work hard you know the capability evolves and that normally takes</i>
	65.	00:05:13	<i>care of the winning kind of thing.</i>
	66.	00:05:15	<i>I absolutely enjoy throwing, I'm going to be throwing to another 25 years.</i>
	67.	00:05:19	<i>Gideon 45 years of age I've alluded to that and yet a couple years ago he had a combination</i>
	68.	00:05:24	<i>three of the best throws.</i>
	69.	00:05:26	<i>Are we beginning to shrink chronological and biological age or are we beginning to expand</i>
	70.	00:05:30	<i>the difference?</i>
	71.	00:05:31	<i>Are we going by our genetic capabilities and apparently at the age of 45 you don't have</i>
	72.	00:05:37	<i>to say I'm old man as far as I'm concerned all right now he's probably 25, 26 years old</i>
	73.	00:05:42	<i>biologically.</i>
	74.	00:05:43	<i>What chronologically that's for the birds.</i>
	75.	00:05:46	<i>Did you know about Al before you started throwing?</i>
	76.	00:05:49	<i>Al was my idol.</i>
	77.	00:05:50	<i>In fact in the kiboutin Israel I had his picture above my bed every morning I would worship</i>
	78.	00:05:57	<i>I mean thousands years ago they would kill me they would say that I worship idols you</i>
	79.	00:06:01	<i>know but he was my idol for many many years from 1955 all right Al is time for years.</i>
	80.	00:06:07	<i>That's a long time ago.</i>
	81.	00:06:09	<i>You're getting older you're getting younger Al you have a scientific interest where'd</i>

Frame	#	Time	Spoken text
	82.	00:06:14	<i>that come from?</i>
	83.	00:06:15	<i>Well I've been in computers now for old 20, 21 years or something like that and when I</i>
	84.	00:06:20	<i>started back into competition I had an eight year layover from 1968 through 76 and when</i>
	85.	00:06:25	<i>I started back I thought I might as well learn as much as I can about the throw and</i>
	86.	00:06:30	<i>I hooked up with Gideon immediately to find out exactly what I was doing wrong why not</i>
	87.	00:06:35	<i>take advantage of all of the innovations that occurred through that eight year span and</i>
	88.	00:06:39	<i>I think the computer analysis of the technique in my event was absolutely the most important</i>
	89.	00:06:45	<i>thing I could determine for the first time what coaches were trying to tell me I could</i>
	90.	00:06:49	<i>see quantitatively where I was accelerating decelerating all these kinds of things and</i>
	91.	00:06:53	<i>then going through that analysis I was able then to launch into my kind of newfound career</i>
	92.	00:06:58	<i>okay with new enthusiasm and knowing what I was doing.</i>
	93.	00:07:01	<i>Al to understand the future we have to understand the past unfortunately or fortunately you're</i>
	94.	00:07:06	<i>the past and the present and the future now where are we going to go with this game?</i>
	95.	00:07:11	<i>I think the computer analysis will continue I think we'll get into very shortly an area</i>
	96.	00:07:17	<i>where athletes will be able to almost step inside themselves we'll have computers simulating</i>
	97.	00:07:22	<i>what the perfect throw will be and throwers will be in effect able to enter their own</i>
	98.	00:07:26	<i>image created by film by computers and as they execute the throw if an arm goes out</i>
	99.	00:07:32	<i>too far a head tilt or something they'll be an alarm go off and say you're changing.</i>
	100.	00:07:37	<i>So feedback systems and computers are going to be very important you see that Gideon?</i>
	101.	00:07:41	<i>Well hologram is the thing of the future and I tell you I'm learning from Mal more than</i>
	102.	00:07:45	<i>he learned from me but he's the head of the game all the time because he will really talk</i>
	103.	00:07:49	<i>about the future we're talking about holography now where you will have the ideal model that</i>
	104.	00:07:54	<i>you actually will see you cannot touch it because you see it but you cannot touch it</i>
	105.	00:07:58	<i>but you can put your body right in it and every time you depart from efficiency either you</i>
	106.	00:08:04	<i>will have some kind of feedback in alarm system or I don't know maybe in this Germany they'll</i>
	107.	00:08:07	<i>give you a 220 I know there are things okay that are a little frightening about the entire</i>
	108.	00:08:13	<i>environment of computer introduction at the sport because computers you know 10 years ago I couldn't</i>
	109.	00:08:18	<i>lift computers that you know right now I hold in the palm of my hand very easily and why not in</i>
	110.	00:08:23	<i>the future be able to implant computers within an athlete and through telemetry exercise that</i>
	111.	00:08:28	<i>athlete because the thing that prevents a runner from going very fast is his brain and through</i>
	112.	00:08:33	<i>telemetry you can override that brain feedback that says I think I'm going too fast wrong fatigue</i>

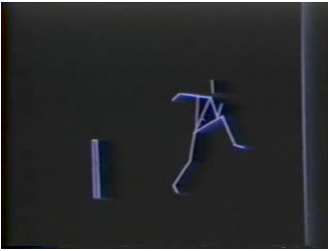
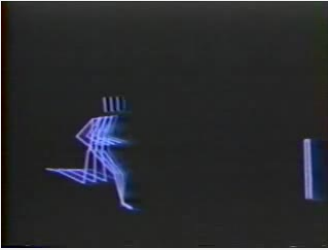

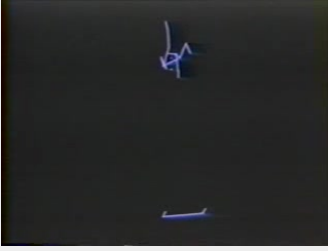
Frame	#	Time	Spoken text
	113.	00:08:39	<i>you can override that with computer implants that are stimulating various muscle groups that's</i>
	114.	00:08:43	<i>right because then we're into robotics well is that going to be legal you see a lot of</i>
	115.	00:08:48	<i>changes taking place in the Olympic rules etc oh it's the technology is here today certainly</i>
	116.	00:08:53	<i>there's going to have to be a way of combating it because then you'll have coaches up in the</i>
	117.	00:08:57	<i>stands okay with telemetry straight stations activating their athletes there obviously has</i>
	118.	00:09:02	<i>to be a stop to that how you do it is through some kind of body scan are I 100% agree with you</i>
	119.	00:09:07	<i>because we are here dealing with a balance between art and science and when one taking over you have</i>
	120.	00:09:13	<i>a situation which is really a non-athletics anymore and we should use science to amplify</i>
	121.	00:09:20	<i>our mind in a way where you can perform the best but it should be a non-invasive method we should</i>
	122.	00:09:26	<i>never implant chips in our body we should never take drugs we should do it as natural as possible</i>
	123.	00:09:31	<i>to achieve our maximum just enhance the an athlete's capability to exercise more efficiently to be</i>
	124.	00:09:38	<i>more productive in his in his training environment that's what we want on an earlier show all order</i>
	125.	00:09:43	<i>was here he was our guest and he had an unusual training throw get in what can you tell us about</i>
	126.	00:09:48	<i>it Vic while we were setting up our cameras during our visit he unloaded these tools during training</i>
	127.	00:09:56	<i>although the troll landed on a heel we were able to calculate that the toes would have</i>
	128.	00:10:02	<i>travel approximately 244 feet that's farther than the world record 224 feet this guy is going to be</i>
	129.	00:10:11	<i>47 years old in 1984 that's the year of the Olympics so look at you this historic</i>
	130.	00:10:18	<i>our order is ready for Olympic gold me now is the man who on the streets of Munich 10 years ago</i>
	131.	00:10:25	<i>attracted major media attention to the marathon</i>
	132.	00:10:28	<i>you may recall that the first runner in the Olympic stadium that day was a fake</i>
	133.	00:10:35	<i>but the running craze that Frank Shorter's gold medal victory inspired is certainly no clue</i>
	134.	00:10:42	<i>and today remains one of America's finest marathoners</i>
	135.	00:10:49	<i>every morning I go out and I see all those people out in the street and they're running like crazy</i>
	136.	00:10:54	<i>and you're the one man who had a lot to do with people getting interested in taking care of their</i>
	137.	00:10:58	<i>own bodies well I think I was at the right place at the right time and and again there's a there's</i>
	138.	00:11:06	<i>a luck element involved in everything that you do and I was lucky that the training I had done was</i>
	139.	00:11:10	<i>right and I think I was also again fortunate that I came along at a time in the scientific</i>
	140.	00:11:17	<i>development of the sport that my type of training was all I needed to do there's all that luck</i>
	141.	00:11:22	<i>involved because the Americans have been very behind in the sophistication of the scientific</i>
	142.	00:11:28	<i>research on sport we do lots of scientific research but then the other countries use our data</i>
	143.	00:11:33	<i>and then they transfer it to the athletes now we're finally doing it here and I may have been</i>
	144.	00:11:38	<i>one of the first that people started to look at because my advantage in running is not strength</i>
	145.	00:11:43	<i>it is it is form and biomechanics and as you reach a certain level of training I think you get to a</i>
	146.	00:11:51	<i>point of diminishing return in terms of just the physical effort that you put out and then you</i>







Frame	#	Time	Spoken text
	147.	00:11:56	<i>have to get to the point where you can improve your form and it's a very difficult thing to do</i>
	148.	00:12:01	<i>you can't visualize it in your own mind and reproduce it you have to be able to see it and I think</i>
	149.	00:12:07	<i>you're starting to see this in a lot of runners now true in 1976 there weren't people like Gideon</i>
	150.	00:12:15	<i>on the scene they were behind the scenes now I think they really are in the forefront Frank</i>
	151.	00:12:21	<i>always in scientific pursuits there seems to be some model like Sebastian Coles he's going to</i>
	152.	00:12:26	<i>become a model now and people are going to try to imitate this guy I think what they'll do is</i>
	153.	00:12:30	<i>they'll study his form to see just what makes him so efficient and you know they do amazing</i>
	154.	00:12:35	<i>things now like they can put him on a treadmill and measure the friction coefficient of his foot</i>
	155.	00:12:40	<i>when he lands and they can see even what kind of shoe he should wear some shoes will give him a</i>
	156.	00:12:45	<i>better friction coefficient than others so they can not only see what makes him good what allows</i>
	157.	00:12:52	<i>him to flow along as he runs they can see and study just exactly what he might have done in the</i>
	158.	00:12:57	<i>way of weight work work or training to improve that form so it's going to be a combination of</i>
	159.	00:13:02	<i>sort of taking the fine points the good points of the superior athlete and then trying to</i>
	160.	00:13:09	<i>generalize enough so that you can develop weight programs even shoe development programs</i>
	161.	00:13:16	<i>to get the athlete to run faster great thing about Gideon having the information on me from 1972 is</i>
	162.	00:13:23	<i>now I think I'm totally rehabilitated I think my strength is back where it should be it would</i>
	163.	00:13:27	<i>be very interesting to be tested again to compare just to see how close I can be to the same efficiency</i>
	164.	00:13:34	<i>that I had before I was injured and that's a great tool to have because otherwise you never</i>
	165.	00:13:40	<i>know and there's always the uncertainty and that's when the psychological element comes in it now</i>
	166.	00:13:44	<i>gives me a means to psychologically know that I am recovered and back to the point where I was</i>
	167.	00:13:48	<i>before I hope this drive and shrink after your muscle pull you did have a tendency to favor your</i>
	168.	00:13:54	<i>stronger leg but with the technique of filming your running style of high speed photography</i>
	169.	00:13:59	<i>and programming it into our computer through a sophisticated tracing process called digitizing</i>
	170.	00:14:03	<i>we're able to illustrate your running style the one that you used in 72 to win a marathon</i>
	171.	00:14:07	<i>gold medal now we can compare that technique with your present form you know getting on the top</i>
	172.	00:14:12	<i>line you see him in 1972 right he looked pretty smooth to me in 1982 when he recovered from the</i>
	173.	00:14:18	<i>injury he really approaching the same style now when he was injured the central quality was a little</i>
	174.	00:14:25	<i>bit different if we look on it from a multiple trace point of view you'll see that the trace is</i>
	175.	00:14:31	<i>a little bit different on the top you seem a little bouncing that's when he just recovered</i>
	176.	00:14:36	<i>from the injury and he's going up and down but when you look on 1982 it's almost completely straight</i>
	177.	00:14:43	<i>yeah completely straight that's a great runner friend shorter you're saying get in keep that</i>
	178.	00:14:47	<i>head from bouncing up and down and you'll be a faster runner yes in fact the look on his upper</i>
	179.	00:14:52	<i>body is as important as the lower body and you don't want to bounce with it if we're going to</i>

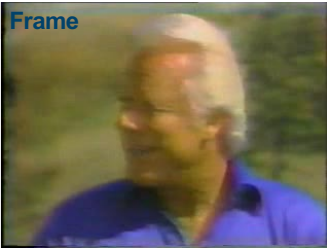





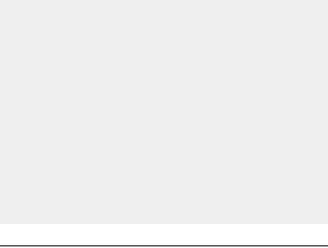
Frame	#	Time	Spoken text
	180.	00:14:59	<i>use instruments if we're going to make measurements then why not use the finest instrument right</i>
	181.	00:15:04	<i>and the other is the psychological feedback every athlete i think once they get to the highest</i>
	182.	00:15:09	<i>level every athlete has to feel that he or she has done absolutely everything they can to prepare</i>
	183.	00:15:15	<i>and now the biomechanics and the other physiological testing are just an element in that training</i>
	184.	00:15:20	<i>it's just necessary for your own sense of competence to do that now we this country we have the best</i>
	185.	00:15:26	<i>technology in the world we put a person on the moon but we don't use this technology</i>
	186.	00:15:31	<i>to people like Frank if we would use that he would be on his own moon which was under</i>
	187.	00:15:35	<i>winning gold medal person yeah the interesting things you go to East Germany and you see all the</i>
	188.	00:15:40	<i>all the application they're doing uh to their athletes and all the literature is in english</i>
	189.	00:15:45	<i>hahaha</i>
	190.	00:15:50	<i>1976 the u.s. women's volleyball team did not qualify for the olympics that's in the sport</i>
	191.	00:15:56	<i>which originated in the united states but things changed for the better and the person most</i>
	192.	00:16:02	<i>responsible for the success of the team which went from 45 in the world to number one with</i>
	193.	00:16:07	<i>dr. airy sullinger number one you sometimes wake up for the middle of night they're waiting</i>
	194.	00:16:14	<i>and we just be check with savaka we just be rush him and does is get overwhelming sometime</i>
	195.	00:16:19	<i>well i'll tell you the men's that i coach are we're not as big as these girls i mean and physically</i>
	196.	00:16:23	<i>not as good as these kids are people think men can do much more than women my experience i found</i>
	197.	00:16:29	<i>out that women can do maybe not physically but mentally much more than men can do all right wherever</i>
	198.	00:16:35	<i>i go i get a lot of questions about one of your veteran players read a rocket well read a rocket</i>
	199.	00:16:40	<i>didn't accept when we do the athlete i mean she could have made the u.s. olympic team may be in</i>
	200.	00:16:44	<i>two events may be in two hundred meters or in high jump why did he pay that well read a rocket</i>
	201.	00:16:50	<i>at the end we do mechanical biomedical analysis and read out which and find out that the shoe</i>
	202.	00:16:54	<i>uh elevates the center gravity higher than the high jump is in the olympics group but read out</i>
	203.	00:16:59	<i>when she came to the program she didn't jump as well i mean shoe i had the potential to jump</i>
	204.	00:17:03	<i>but she was jumping at that time about seven inches less than she jumps now</i>
	205.	00:17:07	<i>but by the same time when reader came to the program before working with video</i>
	206.	00:17:11	<i>early on the biomechanical analysis and we developed some new concept in a jumping thing</i>
	207.	00:17:16	<i>in valuable jumps which can apply to basketball or training sport it means most really rely upon</i>
	208.	00:17:22	<i>the speed the horizontal velocity and being capable of converting this horizontal velocity</i>
	209.	00:17:28	<i>into vertical velocity mainly utilizing the stopping power the backing power that you have</i>
	210.	00:17:34	<i>in your muscles i have some new flows they just joined with the team about two months ago and</i>
	211.	00:17:38	<i>they're already jumped two to five inches better than they jumped two months ago all right can you</i>
	212.	00:17:44	<i>hear you have a PhD in exercise physiology but can the human in your opinion take that sophisticated</i>







Frame	#	Time	Spoken text
	213.	00:17:50	<i>data and turn it into simple things that they can get their own brain to program it's possible</i>
	214.	00:17:55	<i>if the guy who works with you and we are lucky with Gideon he can bring it to simple terms</i>
	215.	00:18:03	<i>and then if the coach has basic education and some creative mind and some basic scientific</i>
	216.	00:18:11	<i>knowledge then it can even more simplify it and get it down to the to the floor but the process</i>
	217.	00:18:17	<i>is possible the only thing is they're floating in the United States in the rest of the world</i>
	218.	00:18:23	<i>coaches are not used to things in terms of science and it's probably not science there's no question</i>
	219.	00:18:30	<i>it's a very sophisticated and complex activity but needs much more than our eyes and impressions</i>
	220.	00:18:39	<i>the man responsible for the computer software for the volleyball team is dr Gideon Ariel</i>
	221.	00:18:43	<i>Gideon let's be specific how is the computer help the volleyball team well using the computer</i>
	222.	00:18:49	<i>technology we can compare our athletes to the best of the japanese you see the yokayama from</i>
	223.	00:18:54	<i>japan considered to be one of the best piker in the world at that time by comparing flohaiman</i>
	224.	00:19:01	<i>our spiker to yokayama we could create the ideal model we could look on the athletes from different</i>
	225.	00:19:07	<i>angle we can look from them from the side from the front and by learning from the japanese</i>
	226.	00:19:12	<i>we were able to allow flohaiman to become the best new world and Gideon that's what future</i>
	227.	00:19:18	<i>sport is all about back after this</i>
	228.	00:19:25	<i>you ready for some more interesting points on sports let's check in with the Ariel view</i>
	229.	00:19:30	<i>well vick this is the old exercise equipment this is before the time of computers</i>
	230.	00:19:37	<i>these machines do not have an intelligent of them they depends on gravity only and let me tell you</i>
	231.	00:19:43	<i>what i mean by that if i try to live in the sitting press 150 pounds let's look what happened</i>
	232.	00:19:50	<i>it's easy in the beginning and i get stuck here i cannot do it anymore i have to put it back why</i>
	233.	00:19:56	<i>the reason is that my arm with certain angle which is biomechanically inefficient everybody</i>
	234.	00:20:03	<i>knows that it's harder to keep weight on the side and to keep it close to the body so i'm getting</i>
	235.	00:20:08	<i>farther from the body and i get stuck because of a mechanical reason the machine does not the</i>
	236.	00:20:13	<i>machine does not have a brain now let's put a hundred pounds here and see what happened with</i>
	237.	00:20:18	<i>a hundred pounds when i'm lifting a hundred pounds it's too easy in the beginning hard in the middle</i>
	238.	00:20:23	<i>and too easy in the end in fact if i'm doing it fast enough it flies it has zero weight in the end</i>
	239.	00:20:30	<i>because the machine is done now let's go and see the 21st century machine the computerized exercise</i>
	240.	00:20:37	<i>machine this is the 21st century machine this is the computerized machine of the future</i>
	241.	00:20:43	<i>athletes the future athletes will select the number here on the machine will select the proper</i>
	242.	00:20:49	<i>program and from this program will try to do what they're doing the best</i>
	243.	00:20:53	<i>well i'll select the sitting press the same exercise that i did there the computer allowed</i>

Frame	#	Time	Spoken text
	244.	00:20:59	me to select all kind of viable in this case i will select the viable velocity try to simulate
	245.	00:21:05	a shot putter in my first repetition this will simulate the actual shot put routine and i push
	246.	00:21:12	us all the second all the way i did 124 pounds and the second repetition let's see 110 pounds
	247.	00:21:19	and the third repetition it's accelerate like the shot 112 now i would look on my fourth
	248.	00:21:25	curve and see where my deficiency is let's understand the fourth curve these are the angle here that's
	249.	00:21:31	when i extend my arm it's going up and then when i pull my arm down it's going down that's 5 degree
	250.	00:21:37	10 degrees 15 degrees here is the false 40 pounds 84 80 pounds 120 pounds look what happened in the
	251.	00:21:44	beginning when i start to extend my elbow i'm getting to 120 pounds i keep 240 and maybe 115
	252.	00:21:52	then on the way down in this case it's not so important i have a deficiency and the reason is
	253.	00:21:58	that i cannot accelerate the bar to about 240 pounds 250 pounds the guys like Brian Oldfield
	254.	00:22:04	can do this is the intelligent machine of the future all my information that you see here going
	255.	00:22:10	to be stored in the computer never been forgotten always compare me to the best in the world and to
	256.	00:22:17	myself this machine which has a computer in it will allow Future Sport athletes to tune their practice
	257.	00:22:26	perfectly for their own condition and achieve optimism thank with me an incredible athlete
	258.	00:22:32	Edwin Moses Edwin delighted to have you here and i'm dying near the story about how anybody in this
	259.	00:22:38	day and age can go 72 meters undefeated well it's been a long road i've been going racing for six
	260.	00:22:47	years now in the 400 meter hurdles and i've really been trying to take each race individually instead
	261.	00:22:52	of thinking in terms of breaking a record standing at 88 or winning 100 in a row but really just
	262.	00:22:59	trying to look at each race individually and attacking individually and playing on one race
	263.	00:23:04	at a time when you're little too we got a guy a doctor getting arrows just shaping at the vet
	264.	00:23:09	because he wants to show you the digitization remember we were able to film you earlier this
	265.	00:23:13	week and so now you're going to get a chance to see it Edwin great having you with thank you
	266.	00:23:16	very much good see you okay
	267.	00:23:24	all right thank you for coming here thank you another superstar in Future Sport
	268.	00:23:30	Edwin the little dart here in the center of your body is the center of gravity

Frame	#	Time	Spoken text
	269.	00:23:35	<i>most people when they are running the landing of the center of gravity behind their foot</i>
	270.	00:23:40	<i>actually falling backward or stopping themselves you have a fantastic technique where when you</i>
	271.	00:23:46	<i>learn after going over the hurdles the center of gravity is in front of your foot which means</i>
	272.	00:23:52	<i>all your momentum is transferred to the body going forward you falling forward and continue to run</i>
	273.	00:23:58	<i>you don't lose any energy that's the main problem in running forward because keep them slowing up</i>
	274.	00:24:02	<i>between the hurdles every time you slow down and you're happy use a lot more energy to speed up</i>
	275.	00:24:08	<i>you can look at it also in a continuous trace then we'll see the whole trace and if you look</i>
	276.	00:24:14	<i>on this door back in the middle it's the central gravity so it's going up and going down</i>
	277.	00:24:19	<i>you can look at it also from the front so we'll see you from the corner you bring it from the front</i>
	278.	00:24:24	<i>the criteria here Edwin that you will not go over the hurdles too high and as you see yourself</i>
	279.	00:24:30	<i>you stretch pretty good you're going forward you can see the little data center of gravity</i>
	280.	00:24:35	<i>just going over the hurdles but you are going to stretch it pretty good it's important that you</i>
	281.	00:24:40	<i>are not going to jump over the hurdles but actually to stretch your body as much as possible for that</i>
	282.	00:24:47	<i>reason let's look on the same motion from the top view and we'll check how much you stretch over</i>
	283.	00:24:55	<i>the hurdles now looking from the top view we see you're going toward the hurdles and you have a</i>
	284.	00:25:00	<i>tremendous stretch with your body tremendous stretch this stretch allows the central gravity</i>
	285.	00:25:05	<i>to stay low and therefore save you time over the hurdles here you see the same thing in a multiple</i>
	286.	00:25:12	<i>trace look on this stretch Edwin you have incredible stretch here and this is fantastic technique</i>
	287.	00:25:19	<i>turn anything new Edo yeah i'm learning a lot here it's first time i've really been able to</i>
	288.	00:25:23	<i>see myself in slow animated motion stick figures first time for sure first time all of them might</i>
	289.	00:25:29	<i>not be the last time Edwin thanks for being with us super job all right get in great job as</i>
	290.	00:25:33	<i>usual all right thank you all right thank you coming up next we'll take a close look at an</i>
	291.	00:25:39	<i>aesthetic event as we meet Sharon Shapiro 1980 1981 intercollegiate gymnastics champion well this</i>
	292.	00:25:46	<i>is Sharon Shapiro 1980 81 intercollegiate gymnastics champion</i>


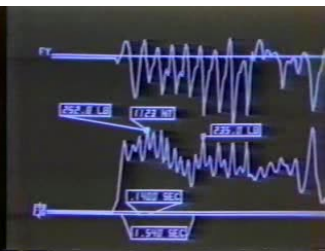
Frame	#	Time	Spoken text
	293.	00:25:54	<i>when did you start how long have you been in gymnastics 11 years i started at 10 and i know 21</i>
	294.	00:26:02	<i>is that typical for people to start at 10 nowadays it's old then it was a good age for me i think</i>
	295.	00:26:07	<i>it was a perfect age because i didn't burn out you like the challenge but you've been talking a</i>
	296.	00:26:11	<i>little bit about the scientific thing that your body needs to be a certain body type to do things</i>
	297.	00:26:15	<i>you need to know your body in relation to the task well earlier we had a chance to film you</i>
	298.	00:26:21	<i>put you on dr. Gideon Ariel special computer and now we're going to take a look at your body</i>
	299.	00:26:26	<i>and the task that you perform in very difficult situations big we're lucky today to see Sharon</i>
	300.	00:26:32	<i>Shapiro and her performance you see the little dot in the middle of the body this is the central</i>
	301.	00:26:40	<i>gravity all the forces and all the motion of the athlete the gymnast specifically is rotate</i>
	302.	00:26:47	<i>around the central gravity see how the whole body segment going around the central gravity</i>
	303.	00:26:51	<i>the question is how could we make Sharon Shapiro even do the same stand better</i>
	304.	00:26:57	<i>let's follow her central gravity better you see here the little dot and you see her motion</i>
	305.	00:27:03	<i>we finding out that according to the biomechanical analysis that if the central gravity at that</i>
	306.	00:27:09	<i>point would go two inches higher she would be able to complete the whole stand much better</i>
	307.	00:27:15	<i>let's see here in the actual condition Sharon does not complete the whole turn because she</i>
	308.	00:27:21	<i>didn't raise her central gravity high enough here you see the multiple images of the forces</i>
	309.	00:27:26	<i>the athletes in the future will be able to use this computer technology in order to optimize</i>
	310.	00:27:31	<i>the performance and to know how to train but she's still a champion right get in she's biomechanically</i>
	311.	00:27:37	<i>efficient aesthetically beautiful but sitting right here in the chair she's beautiful too Sharon</i>
	312.	00:27:42	<i>absolutely great having you with us thank you it was great being here</i>
	313.	00:27:45	<i>hi welcome to Future Sport i'm big braiden with me charlie jones charlie great having you on</i>
	314.	00:27:48	<i>Future Sport thank you very are you all know charlie jones as the voice of the afl football</i>
	315.	00:27:53	<i>the original super bowl voice but also you recognize his face but not usually on the golf course</i>
	316.	00:27:58	<i>but charlie jones has a problem what's your problem in golf like every uh high handicapper a weekend</i>
	317.	00:28:04	<i>player it's a direction and distance direction and distance every golfer's hemisphere we're</i>
	318.	00:28:10	<i>going to show you golfing secrets on Future Sport you probably have never seen before</i>
	319.	00:28:14	<i>aerospace technology and computers will be utilized to compare charlie jones</i>
	320.	00:28:18	<i>the us open winner jerry pay move this silk that's how they describe his scope</i>
	321.	00:28:24	<i>charlie now we get a chance to really take you apart buddy well that was that was a lot of fun</i>
	322.	00:28:28	<i>because usually when i play on a golf course the only gallery is the golf cart but here with</i>
	323.	00:28:33	<i>the cameras and everybody you do you get a little bit a little bit tense but the pressure is always</i>
	324.	00:28:37	<i>good i don't get to play that much in all honesty because they want to swing a golf club in airports</i>
	325.	00:28:41	<i>now that's when i spend most of my time always amaze when i see top celebrities and you think</i>






Frame	#	Time	Spoken text
	326.	00:28:46	gee they they perform before millions just the way you have it and all of a sudden they're out there
	327.	00:28:51	in front of the camera themselves they're performing and they can't get the tennis racket through
	328.	00:28:54	the club head down they look like a toad i didn't know he looked good to me no but but you're right
	329.	00:28:59	but it's a different sport i'm very comfortable when i'm working in front of a microphone or in front
	330.	00:29:03	of a camera because then i'm communicating only with one person but like you say here you know now
	331.	00:29:07	i'm trying to hit my career golf swing today career glossing well let's see if you did it
	332.	00:29:13	we're going to go in right now and check out your high speed film a hundred frames per second
	333.	00:29:17	turned into technical data with our resident scientist giddy and Ariel
	334.	00:29:22	with us here is dr n fanny she is going to digitize the firm this process consists of touching the
	335.	00:29:30	joint center and this screen is very sensitive to location so every time and touch the joint
	336.	00:29:37	center such as the wrist and the elbow and the shoulder this information going directly to the
	337.	00:29:42	computer every frame of information going there on its process and from that we can calculate the
	338.	00:29:50	displacement the velocities the acceleration the amount of energies the deficiency and advantages
	339.	00:29:58	of every individual activity here you see gerry pay with drop classic swing extremely
	340.	00:30:05	smooth with a strong full body turn and notice page straight left arm on the right is our computer
	341.	00:30:11	model of gerry pay and on the left we see Charlie john's comparative swing as you can see gerry
	342.	00:30:20	pay turns his body more than john's he's coiling more his body segment and therefore can transmit
	343.	00:30:27	more energy to the broad we're using also holographic technology where we put in Charlie
	344.	00:30:34	john's within gerry pay its body therefore we can do comparative analysis between the two straws
	345.	00:30:41	well giddy looks to me as though Charlie Jones uses more arm and less body yes but this is the
	346.	00:30:47	illusion people think that you swing with the arm you really swing with the body you use the
	347.	00:30:52	intricate timing of the heavy segments of the body and therefore allow transmit energy into
	348.	00:30:58	the arms the arms going just for the ride this holographic research and technology will allow
	349.	00:31:06	golfers in the future to optimize the golf swing for the best technique now this man is holding a 16
	350.	00:31:14	pound shot this is a very different show that will be back with a very strong man
	351.	00:31:33	welcome back you know before we went to commercial we saw Brian o'field dunk a 16 pound shot
	352.	00:31:39	it looks easy but in order to execute this gun he had to apply over 900 pounds of force
	353.	00:31:45	Brian's one of the many athletes who come from around the world to see dr giddy and Ariels
	354.	00:31:49	on field advice let's listen in low body first low body first
	355.	00:31:55	yeah okay okay no didn't it feel better yeah it was well let's say i have to hold it higher when
	356.	00:32:09	i'm lower i didn't drop it in front Brian you and me knows that you are not putting the shot you
	357.	00:32:14	throwing the shot so basically you put the shot as far as possible behind you and you're basically
	358.	00:32:20	trying but to get to this position you have to throw the hip first right so let's do it again

Frame	#	Time	Spoken text
	359.	00:32:28	now giddy is a former olympian and what he's trying to do it to get Brian to create a whipping motion
	360.	00:32:32	by allowing the lower body to hip to just move very rapidly stop abruptly and then that transfers
	361.	00:32:38	energy to the upper body the lower body going first trailing to the upper body same thing
	362.	00:32:47	start lower like you did before
	363.	00:33:00	okay okay was not as much separation as before i came wider that's slow also what what happened
	364.	00:33:07	with the front leg what you tell me what happened with the front leg
	365.	00:33:10	it was off was off the ground well how can how can you throw in fact stand here push me on one leg
	366.	00:33:18	try to push me on one leg on one leg stand on one leg push me where you are i'm stronger than you
	367.	00:33:24	i'm pushing you on one leg push me again on one leg on one leg no you have two legs push me on one leg
	368.	00:33:30	push me you can't you know try to push me with both legs that's easy
	369.	00:33:36	so what is that telling you how can the both legs are better than what that's right let's do it again
	370.	00:33:46	i am Vic Braden welcome to another edition of Future Sport on today's show we'll concern
	371.	00:33:51	ourselves with your body here you see some typical gymnasium equipment
	372.	00:33:58	but on this show you are going to see some sophisticated electronic equipment
	373.	00:34:03	which is going to mold tomorrow's athletes inside these doors already working in the future
	374.	00:34:10	dr. Franco Colombo former mr. universe and current mr. Olympia dr. Franco Colombo
	375.	00:34:18	former mr. universe no what a great vibe i want to ask you how you got started how to somebody
	376.	00:34:23	you didn't get started when somebody kicked sand in your girlfriend's face no no i said
	377.	00:34:28	do some other sports before i used to be a box size to my soccer in Europe and Italy and then
	378.	00:34:34	i went into a sport i've always wanted to train to benefit my body more like to get in shape look
	379.	00:34:40	good and i found out that weight training in bodybuilding might be one of the best for that
	380.	00:34:46	and slowly i got involved in that thinking i would be a champion someday and then i competed in one
	381.	00:34:51	little contest and i won then i went into bigger countries like that that's how i got into it
	382.	00:34:56	now we had a chance earlier this week to take a look at your body and how it functions upon
	383.	00:35:01	some special electronic mechanism so let's go into the laboratory and we'll take a look
	384.	00:35:08	the first exercise program that Franco demonstrated was a new weight training device that for the
	385.	00:35:13	first time adjust to your body rather than making your body adjust to the machine
	386.	00:35:19	this machine regulates resistance with the computer and it's based upon your specific needs
	387.	00:35:24	let's get to the inventor of this amazing machine dr giddy and area the computer will
	388.	00:35:28	identify where to push the most resistance will stop for one second and then release
	389.	00:35:33	this is very unique for weight training ready go all the way and push push push push
	390.	00:35:40	all the way okay that's 294 pounds okay all the way 309 pounds let's go all the way let's break
	391.	00:35:47	the 326 it's still going up it's still going up 325 let's go all the way all the way and push
	392.	00:35:54	okay 325 another 325 okay that's it that was the last one now if we look on the falls that you did

Frame	#	Time	Spoken text
	393.	00:36:02	look on that you started 294 309 326 325 325 302 from a tremendous amount of power now if we want to
	394.	00:36:10	look on the fourth scale what we see here that we really overload him in a specific specific
	395.	00:36:17	so if you want yes remember hi the strongest the strongest here where the pass start and which
	396.	00:36:22	was about 10 degrees so many punishment when you run as long as 450 pounds 450 when i'm standing
	397.	00:36:30	strong this type of exercise equipment allows us exactly to train the master in a particular
	398.	00:36:37	angle so you can train himself in any range that he wants to train you know frankly when i watch
	399.	00:36:42	people like you and dr Ariel it just makes me feel so bad that i look like a grapefruit
	400.	00:36:47	however i've learned one thing for you people i got to lay off those low cal donuts that's all
	401.	00:36:53	there is to it yeah you do have to watch the diet a little bit that's true but are you in good shape
	402.	00:36:57	you i see playing things you play great you play much better than me anyway super i hope that you'll
	403.	00:37:02	come back and join us again thank you very much i'd like to thank you i'm going to look like
	404.	00:37:06	you the next time okay i'm waiting to see you all right here's some tips to remember
	405.	00:37:12	muscle size is no correlation to physical conditioning no shortcuts to fitness
	406.	00:37:18	good conditioning is hard work boy you better believe that and exercise as many minutes per day
	407.	00:37:23	as you eat but that's a good tip now let's check in with dr gittian area our computer and technical
	408.	00:37:28	advisor taking all athletic events that we analyze here whether it was the gymnast the
	409.	00:37:34	boxes the weight lifted the basketball you always have to use shoes shoes are very important because
	410.	00:37:41	that's where you contact with the earth or you contact with the ground you cannot apply force to
	411.	00:37:48	the body or to the implement if you don't apply to the ground because according to newton third law
	412.	00:37:54	you have an action and reaction parameters in other words the more you push up the more the
	413.	00:37:58	body push down and you have two or shoes to observe some of the shock well if you take ordinary
	414.	00:38:06	shoes like that it's a running shoes the question is what is the characteristics of the curvature
	415.	00:38:12	how thick should it be how much shock absorption it would be according to our research not too much
	416.	00:38:18	information was really given to the shoes they are getting better and better but the question is
	417.	00:38:23	what is shoe that weigh one ounce less is it really a better shoe what is the best shock absorption
	418.	00:38:30	characteristics of a shoe well delivered or not we found that it's not necessarily a material we
	419.	00:38:35	design a shoe where you can inflate the shoe you can take a little pump here and actually inflate the
	420.	00:38:41	shoes in so the shoe is filled up with air now when you run on it you have a fantastic shock
	421.	00:38:48	absorption but always remember the more shock absorption you have the more energy you lose for
	422.	00:38:55	example let's take a sprinter shoes when you look on a sprinter shoe a sprinter shoe has no shock
	423.	00:39:00	absorption at all because you want all the forces to go in the direction of the one so for racing
	424.	00:39:06	you don't want shock absorption for running across the block or around the block for exercise

Frame	#	Time	Spoken text
	425.	00:39:11	<i>maybe you want inflatable shoes in some cases in the future we will design a special shoes here is</i>
	426.	00:39:17	<i>a sprinting shoes look on this edge here what this word does it's contribute to the forces in the</i>
	427.	00:39:24	<i>sprinting toward the third motion so this shoe was designed specially with a very special design</i>
	428.	00:39:32	<i>in the future almost in every event mobile and technology will be used so futures 12</i>
	429.	00:39:38	<i>will be relying on this technology to have the most sophisticated shoes for the athletes</i>
	430.	00:39:44	<i>and the most sophisticated shoes for the general public with us today in Future Sport fastest</i>
	431.	00:39:49	<i>done in the rest that's fastest served in the world rascal tenor rascal nice having you with</i>
	432.	00:39:53	<i>us thanks it's great to be here how did you get started in tennis rascal well when i was six years</i>
	433.	00:39:58	<i>old my dad wanted me to be able to learn how to play tennis just so that i could play like</i>
	434.	00:40:05	<i>if i became a lawyer or something like that to do after work as a social game and there was about</i>
	435.	00:40:09	<i>four or five of us that started taking lessons together in tennis we did little league baseball</i>
	436.	00:40:13	<i>we played football together and everything else and we were very competitive and we just started</i>
	437.	00:40:19	<i>playing tennis together and and really enjoyed it and played all the time we have a way in our</i>
	438.	00:40:23	<i>laboratory of measuring precisely how much power is going into that thing by measuring the forces going through the ground so we're going to go in right now and take a look at how</i>
	439.	00:40:28	<i>you serve and how many forces go through the ground with dr. Gideon area perfect all right</i>
	440.	00:40:33	<i>all right well let's go what we want to do now is to measure how much force you're able to throw</i>
	441.	00:40:40	<i>into that sort of in dr. arrows inside on his magic machine all you got to do is come up</i>
	442.	00:40:44	<i>hit your regular serve stand on this force plate whatever goes through the ground</i>
	443.	00:40:48	<i>is going into the serve anytime you're ready</i>
	444.	00:40:52	<i>all right let's take a look get in well vick this is amazing look on last cotana how much force</i>
	445.	00:41:01	<i>it generate on the ground 349 pounds well some people might said why 349 pounds in the ground</i>
	446.	00:41:08	<i>I am generating on the rocket well anything you generate on the ground has to come to the rocket</i>
	447.	00:41:15	<i>and vice versa newton knew that long time ago action in reaction 349 pounds was cotana way only</i>
	448.	00:41:20	<i>175 175 pounds so all the forces going down has to come up 349 pounds that's amazing that how much</i>
	449.	00:41:28	<i>you wait 170 Gideon's right on so that's two times body weight so you put your foot against the</i>
	450.	00:41:37	<i>force plate you dig in and you hit the ball you hit the ball 130 140 miles an hour that's</i>
	451.	00:41:42	<i>amazing to me you generate 349 pounds as Gideon says you shoot your cannon ball by keeping your</i>
	452.	00:41:48	<i>foot on the ground and that's why because you can't shoot a cannon out of a canoe anyway rusco great</i>
	453.	00:41:53	<i>having you with the sun features one thanks great to be here this man is all too familiar with pain</i>
	454.	00:41:58	<i>a heavyweight boxing champion who battled Muhammad Ali three times his career like that of all</i>
	455.	00:42:03	<i>boxers ordered the fine line between sport and combat one wrong reaction or lack of reaction</i>
	456.	00:42:08	<i>reaction</i>

Frame	#	Time	Spoken text
	457.	00:42:15	can spell the difference between glory and pain well I've been around some pretty famous people
	458.	00:42:19	in my life but I always wanted to get a chance to be around Ken Norton great opportunity for me
	459.	00:42:24	great opportunity for you the viewer Ken great having you with this buddy good be here now I want
	460.	00:42:29	to ask you some questions about yourself who are you what's your background and how did you get
	461.	00:42:34	into boxing instead well basically I got involved in the boxing when I was about 23 years old in
	462.	00:42:39	the Marine Corps it's very late age to start but then again in high school and college I was not
	463.	00:42:45	introduced to boxing because in the city I lived in which was a very small town in Illinois uh
	464.	00:42:50	Jacksonville there was no boxing all we had was basketball football track baseball and tennis
	465.	00:42:56	okay and you've been out of boxing for about a year but I know you're still fast I know you're
	466.	00:43:00	still powerful an area this week you've got a chance to take a look at you just how powerful
	467.	00:43:05	and how much speed you have even with a one-year area let's take a look well as Ken punched the
	468.	00:43:10	heavy bag while standing on the force plate dr. Gideon area was able to measure the forces he
	469.	00:43:15	exerted with the jab remembers in every other sport power comes from the ground up so let's check
	470.	00:43:20	in with dr. Gideon area look at this week with his left jab Ken Norton was producing 275 pounds
	471.	00:43:29	this is on one leg on the front leg this is over 500 tons of force going right on the back
	472.	00:43:36	you know can I I really appreciate how much force you get out of those legs buddy but well I'm
	473.	00:43:41	tickle of death you're at the research centers because I always wanted to monitor how big I like
	474.	00:43:46	you can make that blinding speed coming with your arms have you ever up to this point had any
	475.	00:43:52	electronic measurement I took this point I had never tried it before all right now you're gonna
	476.	00:43:56	get a chance to see what the measurement showed you're at the research center
	477.	00:44:01	on this one can we check you not only for power but for hand speed
	478.	00:44:07	look this is the kinetic data for Ken Norton again we look on the first game and what we
	479.	00:44:13	finding out here that every time Ken Norton hit this bag he can reach a force which is approximately
	480.	00:44:19	250 sometime a little bit more sometime a little bit less but every time he hit the bag it's 250
	481.	00:44:26	pounds on one leg also he can do it quite fast we finding out that he can do it almost as 10
	482.	00:44:32	times a second anybody can do that 10 times a second with 250 pounds every hit should be in a
	483.	00:44:40	great shape so what are you then pulling my leg Gideon says you're still like a 20 year old
	484.	00:44:48	looks can be deceiving but let me tell you Ken if you haven't had this machinery before
	485.	00:44:55	would that have changed your life of what the style or anything about your boxing career I feel

Frame	#	Time	Spoken text
	486.	00:45:01	that this machinery and and what you're doing here is very sophisticated so therefore having
	487.	00:45:07	this sophistication added along with my regular training having the science scientific data along
	488.	00:45:14	with my regular training I thought I could have been about 50 percent better at least I would
	489.	00:45:18	have had to improve thanks for being honest with our future support I'm coming to you for a long
	490.	00:45:22	wow that's good Future Sport we'll be right back
	491.	00:45:34	let's take a quick look back at some of the things we've learned on Future Sport
	492.	00:45:38	we've learned that a firm plan with a non-kicking foot is a place kicker's dream
	493.	00:45:41	Olympic great I'll order confirm that you can star in sports at any age
	494.	00:45:48	the great herner Edwin Moses uncovered some secrets of his technique he always landed
	495.	00:45:52	after the hurdle with no breaking motion in C. double-a gymnastic champion Sharon Shapiro
	496.	00:45:58	revealed how to produce the illusion of great height you golfers learned some great tips from
	497.	00:46:03	our computer analysis of the swing this one belonged to broadcaster Charlie Jones who
	498.	00:46:09	talks with us as well about the importance of television in the future of sports
	499.	00:46:14	Franco Colombo not only demonstrated his impressive physique he also previewed new weight training
	500.	00:46:19	techniques heavyweight Ken Norton displayed the quickness and power still with him after a brilliant
	501.	00:46:27	boxing career but ignore this one because the same man Brian O'Field showed us that it's
	502.	00:46:35	important to keep two feet on the ground
	503.	00:46:41	we covered computer science each week with my cohort Gideon Ariel
	504.	00:46:47	Olympic marathon champion Frank shorter help runners of all caliber after all that we finally
	505.	00:46:55	rested we'll be back in a moment
	506.	00:47:05	well Gideon that wraps up another edition of Future Sport but before we go I just can't help
	507.	00:47:16	but notice the intensity at which all the great athletes compete thank you were observed earlier
	508.	00:47:21	in the show you saw the women volleyball team train here in the research center and you find
	509.	00:47:25	out that they trained to such a level that in my estimate these are the best fit human on air
	510.	00:47:32	but you know when women especially get under 12 body fat a lot of physiological changes
	511.	00:47:38	begin to take place well this is amazing how mother nature taking care of this because these
	512.	00:47:44	girls believe it or not they even not menstruating they developed such a mechanism that mother nature
	513.	00:47:50	said they are not prepared to be mothers but they are prepared to be the best volleyball
	514.	00:47:53	players in the world it's really interesting in there having a lot more interesting things we
	515.	00:47:58	got to tell these people
	516.	00:48:01	he's taking it producer of Future Sport of Jim Milburn produced by Jim Carr
	517.	00:49:01	you



#	Time	Spoken text
---	------	-------------

This PDF-document has been auto-generated from a video file by arielweb-ai-bot v1.2.2023.0926 on 2023-09-28 03:47:01 without human intervention. In case of errors or omissions please contact our aibot directly at ai@macrosport.com.

Video filename: **adi-vid-01014-future-sport-256kbps.mp4**

Copyright Disclaimer

The content and materials provided in this document are protected by copyright laws. All rights are reserved by Ariel Dynamics Inc. Users are prohibited from copying, reproducing, distributing, or modifying any part of this content without prior written permission from Ariel Dynamics Inc. Unauthorized use or reproduction of any materials may result in legal action.

Disclaimer of Liability

While every effort has been made to ensure the accuracy of the information presented on this website/document, Ariel Dynamics Inc. makes no warranties or representations regarding the completeness, accuracy, or suitability of the information. The content is provided "as is" and without warranty of any kind, either expressed or implied. Ariel Dynamics Inc. shall not be liable for any errors or omissions in the content or for any actions taken in reliance thereon. Ariel Dynamics Inc. disclaims all responsibility for any loss, injury, claim, liability, or damage of any kind resulting from, arising out of, or in any way related to the use or reliance on the content provided herein.