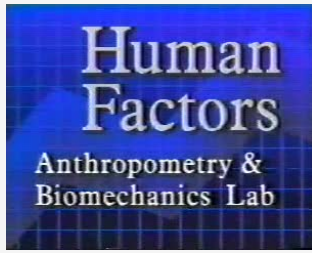




# Ariel Dynamics Inc. Media Library - Video

## Sports Analysis





<b>Code</b>	adi-vid-01139
<b>Title</b>	Sports Analysis
<b>Subtitle</b>	The best Sports analysis system the APAS
<b>Description</b>	The best Motion Analysis System in the World
<b>Subject</b>	APAS;Favorite;Performance Analysis;Sports
<b>Duration</b>	00:12:03
<b>URL</b>	<a href="https://arielweb.com/videos/play/adi-vid-01139">https://arielweb.com/videos/play/adi-vid-01139</a>
<b>Date</b>	2006-07-13 15:59:29
<b>Label</b>	Approved
<b>Privacy</b>	Public

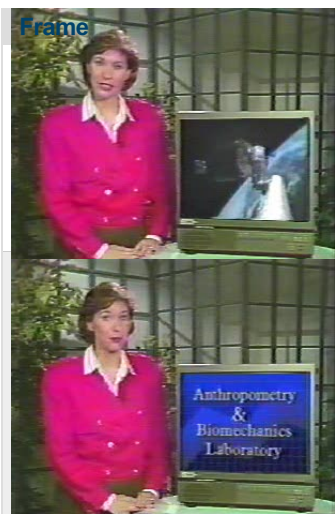
## Synopsis

The video discusses the importance of specialized equipment in protecting football players and astronauts in their respective harsh environments. It highlights the role of NASA's Johnson Space Center's anthropometry and biomechanics lab in designing protective gear for astronauts. The lab uses the Ariel Performance Analysis System (APACs), a computerized system for biomechanical analysis and the study of human motion, developed by Dr. Gideon Ariel. The APACs system has been instrumental in the development of lunar and Mars invasion spacesuits and is also used by athletes for performance optimization. The system can be used to analyze and rehabilitate patients, providing a clear-cut method for analyzing injuries and recovery. The APACs system is user-friendly, menu-driven, and does not require previous knowledge of computers. It can integrate choice platforms, EMG, and kinematic analysis in real time, and can work with any speed of video camera. The system allows for the analysis of human movement, helping to optimize performance and diagnose injuries.


Model Id: gpt-4-0613  
 Created on: 2023-09-19 02:26:25  
 Processing time: 00:00:16.2640000  
 Total tokens: 2108

## Audio transcription

Frame	#	Time	Spoken text
	0.	00:00:00	A lot of time and thought goes into improving the football players' chances of survival
	1.	00:00:16	in such a violent sport.
	2.	00:00:26	Special equipment helps the player adapt to the hostile elements of the playing field.
	3.	00:00:32	Since the human head wasn't meant to crash into other objects,
	4.	00:00:36	it didn't physically evolve to withstand such a force.
	5.	00:00:39	So, the helmet was designed.
	6.	00:00:42	Years of improvement have refined the helmet to where it protects a player on the playing field.
	7.	00:00:48	The harsh vacuum of space is another environment where the human body is not designed to function.
	8.	00:00:54	But special equipment has allowed humans to exceed the limitations of their bodies.
	9.	00:01:00	Since space is more unforgiving than the grid iron,
	10.	00:01:03	the equipment which protects humans there must be designed with intricate precision.
	11.	00:01:09	Each individual body must be measured, tested, and examined here on Earth



#	Time	Spoken text
12.	00:01:14	<i>in order to design a suit which will protect it in space.</i>
13.	00:01:19	<i>At NASA's Johnson Space Center, the anthropometry and biomechanics lab</i>
14.	00:01:23	<i>investigates many of the biomechanics issues that go into the human factors design</i>
15.	00:01:28	<i>of protective space gear for astronauts, gravity setting of the ADL itself,</i>
16.	00:01:33	<i>in the neutral buoyancy of the weightless environment training facility,</i>
17.	00:01:38	<i>on the two-dimensional zero gravity of the precision air bearing floor,</i>
18.	00:01:43	<i>and in the actual three-dimensional zero gravity,</i>
19.	00:01:46	<i>created aboard the KC-135 research aircraft.</i>
20.	00:01:50	<i>This in addition to the ADL is the Ariel performance analysis system.</i>
21.	00:01:55	<i>The Ariel is actually a computer that works in conjunction with a video player and monitor.</i>
22.	00:02:01	<i>Through frame-by-frame analysis, body joints are manually digitized from video recordings.</i>
23.	00:02:08	<i>These points can then be graphed and analyzed, or used to create an animated figure.</i>
24.	00:02:14	<i>This helps determine how far the subject can stretch his or her arms.</i>
25.	00:02:19	<i>We call this the distance reach envelope.</i>
26.	00:02:23	<i>The anthropometry and biomechanics lab is the unknown facility of its kind,</i>
27.	00:02:28	<i>male is used to measure the impact forces acting on the body's skeleton during locomotion.</i>
28.	00:02:35	<i>It produces information concerning lower torso mobility limits,</i>
29.	00:02:39	<i>which can be incorporated into designs for a Mars lunar suit.</i>
30.	00:02:44	<i>The treadmill can be used in both the ADL and the KC-135.</i>
31.	00:03:35	<i>The APACs, the Ariel performance analysis system,</i>
32.	00:03:50	<i>the world's most advanced computerized system for biomechanical analysis and the study of human motion.</i>
33.	00:03:57	<i>The Ariel performance analysis system, or APACs,</i>
34.	00:04:01	<i>was developed by Dr. Gideon Ariel, founder of Ariel Life Systems,</i>
35.	00:04:05	<i>former Olympic committee chairman, NASA consultant, and world leader in biomechanical research.</i>
36.	00:04:12	<i>The APACs was instrumental in the development of the lunar and Mars invasion spacesuits,</i>
37.	00:04:18	<i>and the APACs is the same system that has made Dr. Ariel a consultant to some of the best athletes on the planet.</i>
38.	00:04:25	<i>Among these athletes are Frank Shorter, world medalist in the 1972 Olympics,</i>
39.	00:04:30	<i>Hal Oder, former Olympian, Brian Orfield, world champion in the shot put,</i>
40.	00:04:36	<i>the US women's vulnerable team, and Mack Wilkins, winner of the gold medal in the 1976 Olympics,</i>
41.	00:04:43	<i>and world record holder in the discus.</i>
42.	00:04:45	<i>The same system can be used by you to diagnose and rehabilitate your patients.</i>

Frame	#	Time	Spoken text
	43.	00:04:52	<i>We are going to demonstrate here, this family the most sophisticated technology</i>
	44.	00:04:57	<i>was created to analyze human movement.</i>
	45.	00:05:01	<i>The question is, why would you need a sophisticated system like this?</i>
	46.	00:05:08	<i>But today, in modern world, whether you are a physical therapist,</i>
	47.	00:05:14	<i>or whether you are an insurance person, whether you are a college trainer,</i>
	48.	00:05:19	<i>any place where we need physical performance, or you will move it,</i>
	49.	00:05:25	<i>the question is, how you quantify the results.</i>
	50.	00:05:29	<i>What we can do with our system is not using two eyes, we are using two cameras,</i>
	51.	00:05:34	<i>and from there we can do what the brain does to the human body</i>
	52.	00:05:39	<i>and actually calculate the two dimensions, for example here I have a runner.</i>
	53.	00:05:44	<i>This runner actually was running while the pictures were taken,</i>
	54.	00:05:48	<i>and he was not even aware that the pictures were taken.</i>
	55.	00:05:52	<i>I can do it in a multiple image, so here I have many, many pictures.</i>
	56.	00:05:57	<i>If a coach, or a trainer, or physical therapist want to look at a person from the top,</i>
	57.	00:06:03	<i>even though we did not have camera on the top, the computer can calculate the view from the top,</i>
	58.	00:06:09	<i>so I can go actually to the audience, put the top, and right now I see the same motion from the top view.</i>
	59.	00:06:16	<i>With the human body, you will have to know precisely if you want to optimize a baseball player,</i>
	60.	00:06:21	<i>or a discus chore, or a runner.</i>
	61.	00:06:23	<i>What is the contribution of each segment of the body to the other segments?</i>
	62.	00:06:28	<i>If you don't know precisely the speed, you cannot tell what is the efficiency of the movement.</i>
	63.	00:06:35	<i>Our system can derive precisely the speed of every joint in the body,</i>
	64.	00:06:40	<i>so that only knows the position, and displacement is also to calculate the velocity.</i>
	65.	00:06:47	<i>The A-pass system is not just a tool for the Olympic athlete.</i>
	66.	00:06:51	<i>In your facility, the A-pass will provide a clear-cut method for analyzing the injury</i>
	67.	00:06:56	<i>and recovering of your patient in your everyday activities.</i>
	68.	00:07:00	<i>Activities such as walking can be broken down and quantified,</i>
	69.	00:07:04	<i>so that the therapist can quickly diagnose and treat the patient with increased success.</i>
	70.	00:07:10	<i>Fields, such as industrial medicine, will open up to the therapist</i>
	71.	00:07:14	<i>due to the ability of the A-pass to take data directly from the work situation</i>
	72.	00:07:19	<i>and extract the necessary information to make all the calculations for the patient's diagnosis.</i>
	73.	00:07:25	<i>The A-pass, like the Ariel computerized exercise system,</i>
	74.	00:07:30	<i>is created to provide the user with the maximum amount of technology in an easy-to-use format.</i>
75.	00:07:37	<i>The A-pass is all menu-driven,</i>	
76.	00:07:42	<i>and no previous knowledge of computers is necessary to operate the A-pass.</i>	
77.	00:07:46	<i>Tutorials, descriptions, and menus make operation of the A-pass self-explanatory.</i>	

Frame	#	Time	Spoken text
	78.	<b>00:07:54</b>	<i>Analysis.</i>
	79.	<b>00:07:56</b>	<i>If your work involves measurement, diagnosis, or improvement of human performance,</i>
	80.	<b>00:08:01</b>	<i>you can't afford to operate without the corners the competition is cutting.</i>
	81.	<b>00:08:07</b>	<i>Integration.</i>
	82.	<b>00:08:08</b>	<i>The A-pass is the only system that can integrate choice platforms,</i>
	83.	<b>00:08:13</b>	<i>EMG, and kinematic analysis in real time.</i>
	84.	<b>00:08:18</b>	<i>Moving.</i>
	85.	<b>00:08:20</b>	<i>The A-pass is the only system that gives the therapist the tools necessary</i>
	86.	<b>00:08:25</b>	<i>to accurately analyze human movement by making not one algorithm available</i>
	87.	<b>00:08:30</b>	<i>but a whole library.</i>
	88.	<b>00:08:33</b>	<i>Kinematic analysis module.</i>
	89.	<b>00:08:35</b>	<i>It can actually calculate the force exerted by specific body segments.</i>
	90.	<b>00:08:41</b>	<i>Adaptability.</i>
	91.	<b>00:08:43</b>	<i>The A-pass can work with any speed of video camera,</i>
	92.	<b>00:08:47</b>	<i>and the A-pass can also work with high-speed film.</i>
	93.	<b>00:08:51</b>	<i>Automatic picture storage.</i>
	94.	<b>00:08:54</b>	<i>The A-pass is the only system that allows the user to exploit</i>
	95.	<b>00:08:59</b>	<i>the full potential of motion analysis by imposing the kinetic data</i>
	96.	<b>00:09:03</b>	<i>over the actual video of the subject.</i>
	97.	<b>00:09:07</b>	<i>Because our data is converted to digital film,</i>
	98.	<b>00:09:10</b>	<i>the A-pass allows the therapist to enlarge any part of the kinematic figure for closer study.</i>
	99.	<b>00:09:16</b>	<i>Let me try to show here, for example, to the occupational therapist,</i>
	100.	<b>00:09:23</b>	<i>how to bring a person's injury back to a maximum performance.</i>
	101.	<b>00:09:28</b>	<i>We try to show to the coach how can he understand the event better</i>
	102.	<b>00:09:33</b>	<i>and how can he take an athlete and perform with a person at its maximum.</i>
	103.	<b>00:09:39</b>	<i>We try to show here that every person is really a real metalist in his own bag,</i>
	104.	<b>00:09:46</b>	<i>but in order to find it and quantify it, we need this technology.</i>
	105.	<b>00:09:51</b>	<i>We have to analyze the movement and try to perfect it.</i>
	106.	<b>00:09:55</b>	<i>That's why you need the A-pass system.</i>
	107.	<b>00:10:00</b>	<i>The A-pass is not just another motion analysis system,</i>
	108.	<b>00:10:04</b>	<i>but the most sophisticated system available to study human movement.</i>
109.	<b>00:10:08</b>	<i>Our system is the high technology which enable to take any video</i>	
110.	<b>00:10:12</b>	<i>and break down the motion into its components.</i>	
111.	<b>00:10:15</b>	<i>In this case, we're taking the baseball game</i>	



- | #    | Time            | Spoken text  |
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| 112. | <b>00:10:18</b> | <i>and try to find out what the characteristics that make a good picture or a good battle.</i> |
| 113. | <b>00:10:23</b> | <i>We took an actual game situation and analyzed it,</i>                                       |
| 114. | <b>00:10:26</b> | <i>and now we can present the results.</i>   |



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| 115. | <b>00:10:34</b> | <i>Basically, you see the characteristics of this particular battle</i>           |
| 116. | <b>00:10:39</b> | <i>taking actually from the game.</i>   |
| 117. | <b>00:10:41</b> | <i>Do you see the multiple image?</i>   |
| 118. | <b>00:10:44</b> | <i>John, you can tell some of the results we found.</i>                           |
| 119. | <b>00:10:47</b> | <i>Well, what we found, first of all, were two very interesting factors here.</i> |



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| 120. | <b>00:10:51</b> | <i>Number one, a lot of good power inhibitors will take their front leg,</i>     |
| 121. | <b>00:10:54</b> | <i>the left leg here, and they'll hyperextend it</i>                             |
| 122. | <b>00:10:57</b> | <i>or straighten the left leg out to generate torque to transfer the weight.</i> |
| 123. | <b>00:11:01</b> | <i>We found out that Jose Consaco has that ability to do so,</i>                 |
| 124. | <b>00:11:05</b> | <i>and he has that movement and its strength right here.</i>                     |



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| 125. | <b>00:11:08</b> | <i>Also, he thrusts his right leg into the pitch,</i>                        |
| 126. | <b>00:11:12</b> | <i>which means he drives into the ball,</i>                                  |
| 127. | <b>00:11:14</b> | <i>and he creates a lot of torque with his hips</i>                          |
| 128. | <b>00:11:16</b> | <i>by doing this particular movement right here.</i>                         |
| 129. | <b>00:11:19</b> | <i>As you can see, his hips spinning and rotating to create that torque.</i> |



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| 130. | <b>00:11:23</b> | <i>It's probably why he has a little bit of a lower back problem also.</i>                 |
| 131. | <b>00:11:26</b> | <i>We found out that he overswings a lot of times,</i>                                     |
| 132. | <b>00:11:30</b> | <i>in other words, his center of gravity is up for torso,</i>                              |
| 133. | <b>00:11:33</b> | <i>so he's past the parallel point.</i>  |
| 134. | <b>00:11:35</b> | <i>So this allows Jose Consaco to give a really good backswing or torque on the swing.</i> |



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| 135. | <b>00:11:41</b> | <i>Now we're going to look at Kevin Mitchell,</i>   |
| 136. | <b>00:11:44</b> | <i>get in and see what we can find out about Kevin.</i>                                   |
| 137. | <b>00:11:48</b> | <i>Kevin happened to be one of the biggest powered hitters in National League,</i>        |
| 138. | <b>00:11:52</b> | <i>and there's some good indications why he shows a little bit of the characteristics</i> |
| 139. | <b>00:11:57</b> | <i>of Jose Consaco, but in a little soccer tone, it's not as big,</i>                     |

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| 140. | <b>00:12:00</b> | <i>but still he has some of his legs.</i> |
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#	Time	Spoken text
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Video filename: **adi-vid-01139-sports-analysis-256kbps.mp4**

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