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Shoes



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Title	Shoes
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Subject	Science;Shoes
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Synopsis

Dr. Gideon Ariel, a computer and technical advisor, discusses the importance of shoes in athletic events. He explains that shoes are crucial as they are the point of contact with the ground, enabling the application of force according to Newton's third law. The design of shoes, including their curvature, thickness, and shock absorption, is critical. Ariel notes that while shoes have improved, there is still a lack of information about their optimal characteristics. He introduces a shoe design that can be inflated for increased shock absorption, but warns that more shock absorption can lead to energy loss. He contrasts this with sprinter shoes, which have no shock absorption to direct all forces towards motion. Ariel predicts that future sports will rely heavily on technology to create the most sophisticated shoes for athletes and the general public.

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Audio transcription

Frame	#	Time	Spoken text
	0.	00:00:00	Now let's check in with Dr. Gideon Ariel, our computer and technical advisor.
	1.	00:00:04	Taking all athletic events that we analyze here, whether it was the gymnasts, the boxes, the weightlifter, the basketball,
	2.	00:00:11	you always have to use shoes.
	3.	00:00:14	Shoes are very important because that's where you contact with the earth or you contact with the ground.
	4.	00:00:21	You cannot apply force to the body or to the implement if you don't apply to the ground
	5.	00:00:26	because according to Newton's third law, you have an action and reaction parameters.
	6.	00:00:30	In other words, the more you push up, the more the body push down.
	7.	00:00:34	And you have to wear shoes to absorb some of the shock.
	8.	00:00:39	If you take ordinary shoes like that, it's a running shoes, the question is, what is the characteristics of the curvature?
	9.	00:00:46	How thick should it be?
	10.	00:00:48	How much shock absorption it would be?
	11.	00:00:50	According to our research, not too much information was really given to the shoes.
	12.	00:00:55	They are getting better and better.
	13.	00:00:57	But the question is, what is shoe that weigh one ounce less?

Frame	#	Time	Spoken text
	14.	00:01:00	<i>Is it really a better shoe?</i>
	15.	00:01:02	<i>What is the best shock absorption characteristics of a shoe?</i>
	16.	00:01:05	<i>Well, the limit or not, we found that it's not necessarily a material.</i>
	17.	00:01:09	<i>We designed a shoe where you can inflate the shoe.</i>
	18.	00:01:12	<i>You can take a little pump here and actually inflate the shoes in.</i>
	19.	00:01:16	<i>So the shoe is filled up with air.</i>
	20.	00:01:19	<i>Now when you run on it, you have a fantastic shock absorption.</i>
	21.	00:01:23	<i>But always remember, the more shock absorption you have, the more energy you lose.</i>
	22.	00:01:29	<i>For example, let's take a sprinter shoes.</i>
	23.	00:01:31	<i>When you look on a sprinter shoe, a sprinter shoe has no shock absorption at all.</i>
	24.	00:01:35	<i>Because you want all the forces to go in the direction of the one.</i>
	25.	00:01:39	<i>So for racing, you don't want shock absorption.</i>
	26.	00:01:42	<i>For running across the block or around the block, for exercise, maybe you want inflatable shoes.</i>
	27.	00:01:47	<i>In some cases in the future, we will design a special shoes.</i>
	28.	00:01:51	<i>Here is a sprinter shoe. Look on this wedge here.</i>
	29.	00:01:54	<i>What this wedge does, it's contribute to the forces in the sprinting to the third motion.</i>
	30.	00:02:01	<i>So this shoe was designed specially with a very special design.</i>
	31.	00:02:05	<i>In the future, almost in every event, modern technology will be used.</i>
	32.	00:02:11	<i>So Future Sport will be relying on this technology to have the most sophisticated shoes for the athletes</i>
	33.	00:02:18	<i>and the most sophisticated shoes for the general public.</i>

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