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Homework 02

The Spike Plate

The preliminary step I take in the design process of a new product is thinking of a problem that needs to be solved. There is one such problem that has emerged over the years involving an activity that I am very passionate about. As a dedicated track and field athlete who specializes in multiple events, I often find myself managing many different spike shoes during meets, practices, and traveling. Track and Field spikes seem to be straightforward equipment that athletes have learned to maintain. In fact there are some issues or nuisances that athletes must be aware of to preserve the shoes as well as the items around it.

One current issue regards spike transportation. Fresh spikes that come out of the box are accompanied by a plastic drawstring sack that is used to hold the spikes and protect it when moving around the athlete's bag. In my personal experience, when the spikes in the sack find their way to the bottom of my athletic bag, over time they poke through the material and put holes in the bag potentially ripping it, and when they find their way to the side of my athletic bag, they poke through the material and scratch me. Proper concealing of spikes is an issue that when addressed will provide fewer poked holes in baggage and athletes.

Another current issue regards versatility during usage. Because I have to manage multiple events I have to switch between different types of spikes (sprinting, jumping, throwing, and distance spikes) quickly and efficiently in order to meet scheduling expectations. Also, many facility regulations are strict regarding where spikes can and cannot be worn due to the potential surface damage that can be dealt

when spikes are worn. On some high-end tracks, spikes are only to be worn on the track. This has been difficult because when athletes have to run to the bathroom or move from one event to the next where there is no track to wear spikes over, they must remove them completely. Even when spikes are allowed on non-track surfaces, wearing spikes over such rigid surfaces as asphalt or concrete will dull and damage the spikes as well. Removing and putting on spikes to get from A to B in time can be cumbersome for such a simple process.

I want to develop a special 'plate' that can easily and firmly stick to the bottom of track spikes and just as easily be removed. It would essentially be a relatively thin layer (or sole) with a cushion that simulates adhesive when applied to the bottom of the shoe and also acts as a sole that is sturdy when contacting the ground. During a meet or in practice when an athlete has to run from one event to the next, he/she will simply be able to step on this 'plate' and run to wherever he/she needs to go and peel them off when ready. Applying this 'plate' to the spike before packing up will also keep the spike from poking anyone or anything in the bag.

My goal for the spike plate is to make it versatile, durable, economic, and aesthetic. The plate must be able to stick to the shoe and peel off at moment's notice. It must be strong enough on both sides of the layer so that it can withstand the wear and tear from both the spikes (above) and ground and surface debris (below) over the course of the Fall and Spring seasons. It must use cost efficient materials since the nature of the product is low maintenance, highly accessible, complimentary, with the ability to be sold in packs. It must have a generally attractive look as to open the door for design expansion. The potential impact as a commercial product is great considering the athletic base spanning the high school, collegiate, and professional levels. The track and field industry is maintained by such major suppliers as Nike,



Adidas, Asics, Puma, Mizuno, and New Balance. As a economic and generic supplement to an essential item in Track & Field, the spike plate can make life easier for the dedicated Track & Field athlete.

There are various stakeholders involved in the design, production, distribution, and marketing of the Spike Plate in order for it to be successful on the market. The most apparent stakeholder is the end-user- the track and field athlete. Ultimately, if the athlete is happy with the product and finds that it makes competition easier to manage, the Spike Plate has potential to grow rapidly. Another stakeholder is the distributor. One very apparent component to the sale of athletic goods is the way that they are advertised. In the past there have been impressive innovations in athletic goods that have come and gone simply because they were not advertised or made as readily available. The success of a product often depends on how companies portray their efficiency or necessity. Major companies like Nike, Adidas, and Under Armour are companies with incredible promotional standards. Having any one of those companies as a stakeholder would be beneficial to the distribution of the Spike Plate.

Alternatively, a less dominant athletic company with a well known track and field fan base such as Asics would serve a similar purpose as it would have a more concentrated market. A third stakeholder involved would be the engineer. It is very important that the material serves its purpose as a cushioning adhesive for the spikes as well as a durable surface for walking with. The science behind the effectiveness and life cycle of the material as well as its economic availability is a difference maker. The job of the engineer is vital to the development of the product.

Over a two semester project span, the Spike Plate can get started in a timely matter. Because of its relative simplicity in that its essentially a two layer piece of equipment, much of the time would be reserved for material research and acquisition.

There would be fixed costs involving each of the two layers, and manufacturing and maintenance costs would be relatively low on the assembly of these layers. Ideally, within two weeks prototypes can be ordered, assembled, and tested. Within 2 months the Spike Plate can be fully designed, ordered and distributed on a small scale. With research and development of this initial shipment, the next two months will be a large scale test on the market.

Personally I find myself lacking in the knowledge of a materials processing. This will be essential in developing the specific adhesive required to preserve spikes and last wear and tear. Whether or not that adhesive is a fabric, polymer, or a hybrid of materials, the role of the engineer is essential in developing this material. An engineer with a background in materials would be vital in the development process.

The strength of the development process is that it is a simple product with no electronic components. It is a two layer piece of equipment that can borrow concepts from current popular shoe soles in the industry. Also, because of the minimal quantity of components per model, costs will be relatively fixed. Because of its simplicity, it can be developed on a mass scale level. The weakness of the Spike Shoe is the broadness (or lack of) in its user-base. It will be essential to outreach to the track and field market for it to succeed. Also, this issue effected myself dominantly because I am a multiple event athlete. I had to manage many spikes and be as versatile with them. The product would have to appeal to athletes with numerous spike shoes, within the track and field market. The Spike Shoe seems to be an incredible opportunity because of its versatility. Never before has there been a simple slip-on, slip-off piece of equipment that can be used for all spikes. This product can be sold in packages of 3 or even as a supplemental bonus when selling track spikes themselves. The threat would be failure to market it properly. If it is not cost efficient or economically

accessible, the product would be overpriced and the ease of purchase and use would be compromised. The nature of the Spike Plate is a supplement that should be viewed just as minimally as the plastic drawstring bag the spikes come in. This is the basic SWOT evaluation.