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PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*"Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation"*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-SS028) FITFLEX

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ABSTRACT

Introducing our cutting-edge Modular Cleat System, meticulously designed to enhance player performance and safety across diverse playing surfaces. Athletes can effortlessly customize their footwear by switching between longer, conical cleats for firm grass pitches and shorter, bladed cleats for wet or muddy fields, ensuring exceptional traction and stability in every situation. The key advantage of our system lies in its adaptability, allowing players to fine-tune their traction to match specific conditions, thereby boosting their competitive edge while minimizing injury risks. Additionally, our ergonomic design prioritizes player comfort and endurance, reducing fatigue and discomfort during prolonged play and enabling quicker recovery between sessions. In summary, our Modular Cleat System offers a comprehensive solution to elevate player performance and safety, providing adaptability, stability, and ergonomic support to empower athletes to excel in any environment.

Keywords: Footwear, Detachable, Versatility, Performance, Safety, Adaptability

1.0 INTRODUCTION

Introducing FitFlex, our latest innovation in athletic footwear designed to revolutionize comfort, performance, and versatility for football players. These boots address the need for adaptable footwear across different playing surfaces and weather conditions by featuring detachable cleats. The central challenge in traditional football boots is the necessity for multiple pairs for various terrains, resulting in increased costs and inconvenience. Our solution overcomes this by allowing athletes to switch between three types of cleats Firm Ground (FG), Soft Ground (SG), and Hard Ground (HG) with a simple twist-lock system. This enables players to customize their traction and stability without purchasing additional boots, providing a cost-effective and convenient solution for optimal performance on any field.

2.0 OBJECTIVE

The addition of a Modular Cleat System to FlitFlex boots enhances player performance and safety by enabling easy stud customization for various surfaces. With longer, conical studs for firm grass and shorter, bladed studs for wet or muddy fields, players can adjust stability and traction as needed. This adaptability not only improves confidence and speed but also reduces slipping risks during quick movements. Moreover, the ergonomic design of FlitFlex boots minimizes fatigue, ensuring sustained peak performance. Overall, the Modular Cleat System enhances flexibility, reduces falling hazards, and promotes comfort and agility, empowering athletes to excel across diverse playing conditions.

3.0 METHODOLOGY

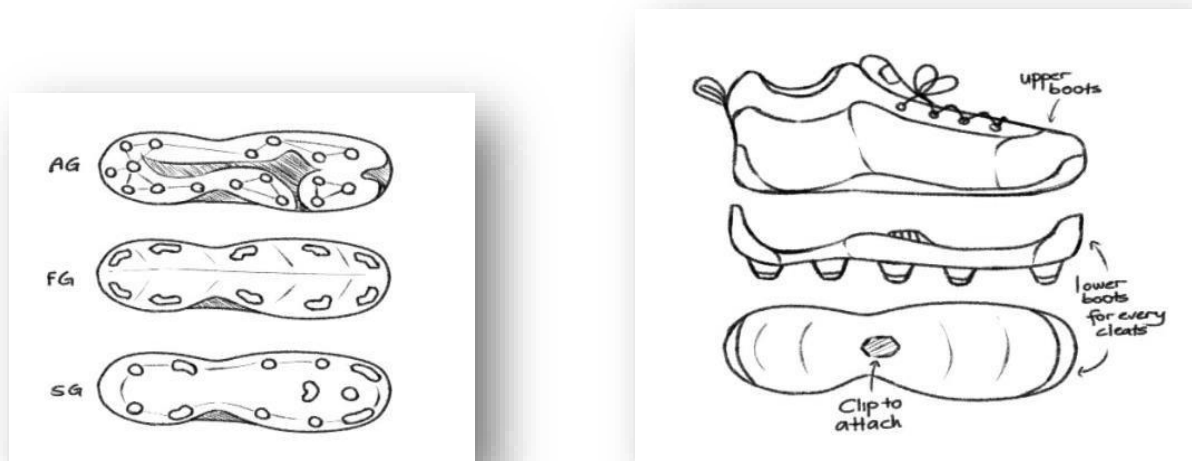


Figure 1: Shoe Sole Picture

The FlitFlex is an innovative football boot designed to address the problem of varying pitch types and unpredictable weather conditions, providing players with a customizable solution for optimal performance. This unique boot features a detachable soleplate system that allows players to adapt their footwear to different playing surfaces. Using a Velcro mechanism, players can easily attach and align the desired soleplate, then secure it with a twist-lock system for added stability. This design ensures a snug and reliable fit, whether on firm ground, artificial turf, or soft ground after rain. By offering this flexibility, FlitFlex gives players the freedom to switch between soleplates to match pitch conditions without the need for multiple pairs of boots. The innovative mechanism makes it practical and convenient, enhancing safety and performance while allowing players to focus on their game, not their footwear.

4.0 RESULT

The FlitFlex innovation lies in its unique design with interchangeable sole plates, allowing players to adapt to three different types of football pitches with a single pair of boots. This modular approach enables players to select soleplates for firm ground, soft ground, or artificial turf, offering versatility that improves performance and safety.

Despite some concerns about the comfort and feel of a two-piece design raised during interviews with university football players the concept was met with overall positive feedback, particularly due to its cost-saving benefits and practicality.

The image shows the results of a survey with 37 respondents about the practicality and potential purchase of boots with interchangeable soleplates for different types of ground. In the first pie chart, 81.1% of respondents believe it is practical to have such boots, 18.9% are unsure, and none think it is impractical. In the second pie chart, 73% of respondents would buy these boots if the innovation were available, 24.3% might consider buying them, and 2.7% would not buy them. There is unanimous interest among respondents in football boots with interchangeable sole plates. Overall, the data from both pie charts indicate a strong market interest in the innovative football boots, with a majority willing to purchase and unanimous interest in the specific feature of changeable soleplates. This positive feedback highlights the potential success of the product in meeting consumer needs and preferences.

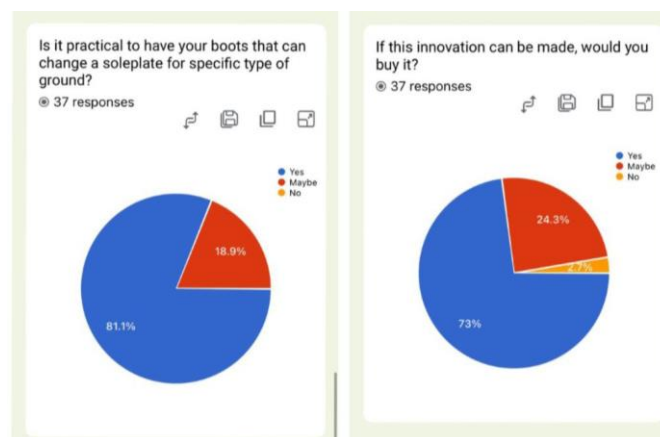


Figure 2: Survey on how much students are interested in FitFlex.

5.0 CONCLUSION

In conclusion, FlitFlex revolutionizes football footwear by addressing longstanding issues of adaptability and comfort. Its removable soleplates and Modular Cleat System allow athletes to tailor their boots to various playing surfaces, enhancing both performance and safety. Despite some initial concerns about comfort from college-level athletes, the overall feedback highlights the practicality and cost-saving benefits of the design. As further refinements are made to enhance comfort, the FlitFlex stands as a groundbreaking technology in football footwear, offering flexibility and affordability that could reshape the industry and empower athletes with greater control over their gear without compromising support or grip.

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