(54) Abstract Title: An ankle protection system for footwear

(57) An ankle protection system for footwear that protects the wearer's ankle from impact injuries, while playing football or baseball, skateboarding, or skating that is integral to the footwear. The protection system has two plastic cushioned shells A that are located on both sides of the ankle region. Each plastic shell has a set of cushioned layers 2, 3, 4, 5 that are fastened to a base material made of nylon, and secured around the ankle via a Velcro (RTM) strap or elastic band C. The ankle protection system may be integral to the rear of the footwear and secured around the foot via the tongue of the footwear. The protection system is integral to the ankle region of the footwear, a flexible membrane B may be positioned in the Achilles tendon area of the ankle system to allow full movement of the foot.
DESCRIPTIONS

TITLE OF THE INVENTION:

Ankle Protection System for Soccer shoes, Football shoes, Baseball Shoes, Speed skates skateboard, Ice skates and Hockey shoes.

BACKGROUND OF THE INVENTION

The present footwear invention provides a solution for a overseeing injures problems in the ankle region, presented by athletes in the practice of contact sports or others.

The Ankle protection system solve the problematic of direct impacts over the foot surface (ankle), where the system receives the direct impact energy over its own surface and absorb and distribute equally this energy. Therefore the injuries will have a less dramatic consequence or will be nullify.

There are not proposed designs in the market place that approach protection of this area. Most of the related products especially in therapy, which do not address problems in the sport field, only approach the problem of ankle support or, where the main apparently problems laid on ankle sprains.

In Sports such as Soccer, Football, Baseball, Hockey there are considerable injuries (fractures), open cuts, abrasions, bruises in the ankle region as a result of impacts with other athletes and fast moving objects. It is well known that many of the called Ankle Sprains, are misdiagnosed as such, and are in reality small micro-fractures, caused by impacts or torsion forces.

In Practice of Sports like speed skating, skateboard and ice skating considerable injuries (open cuts), abrasions, are also produce in the ankle region most of the time for friction against pavement, ice, metal, impacts with solid objects, even though these sports are not in the category of contact sports and do not use long boots, they do need protection and required full flexibility of the ankle region. Here laid the advantage of the proposed design, that provides protection without losing flexibility.
A new invention in the Sport field is needed to reduce ankle injuries in athletes. The innovative ankle protection system addresses this problem.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide athletes in contact sports and other sports with a system that reduce or nullify injuries, fractures in the ankle region, by avoiding direct impacts of sharp objects into skin and bones. The system will absorb the kinetic energy of the impact on its own surface.

Therefore, an integrated construction for sport shoes, especially in contact sports brings an answer to the problematic.

The ankle Protection system its form by an integrated construction in the rear top of the shoe in form of a cushioned plastic shell (plastic convex Shell) that provides protection to the ankle region against impacts in both sides of the foot, providing at the same time full movement capacity. A flexible membrane positioned in the Aquilles tendon area of shoe allows the full movement capacity of the foot.

BRIEF DESCRIPTION OF THE DRAWINGS.

Page 1. System Side view and cut view of the layered Protection shell.
Page 2. System Rear view. System Front view
Page 4. System Side view with version 1, Letter F
Page 5. System Perspective view
Page 7. System Side view with version 3, Letter G

DETAILED DESCRIPTION OF THE INVENTION.

The ankle Protection system is conform by an integrated construction in the rear top of the shoe in form of a plastic cushioned layered shell material combination, that provides protection to the ankle region against direct impacts in both sides of the foot. The system absorbs the kinetic energy of the impact and distributes it equally over its surface with a variety of layered materials under its convex form. An attached flexible membrane positioned in the Aquilles tendon area of shoe system allows the full range movement capacity of the foot.

The system is hold together to the foot using a Nylon strap attachment (elastic band or Velcro band) that is integrated to the plastic shell and provides adjustment to the system, adaptability of comfort and wraps around the Tibia and Fibula bones closing the system grip and stability.
The system provides a solution to avoid the problem of fractures, injuries, abrasions, bruises and swallows in the ankle region in athletes for specific practice of sports such as Soccer, Football, Baseball, Hockey, Skating and Skateboard.

The System reproduce the free movements of the ankle region (eversion) (inversion) (dorsiflexion) and Plantar flexion, thanks to his elastic membrane in the Aquilles tendon area of the rear shoe which enables a full flexibility movements, speed and comfort. The System is designed to integrate with construction of Sport shoes.

The plastic convex shell provides protection to the ankle region against direct impacts. The system construction absorbs the kinetic energy of the impact and distributes it equally over its surface with a combination of layered materials under its plastic convex form. The plastic convex form construction covers and protects both sides of the athlete’s ankle (specifically the fibular lateral Malleolar, the Tibial medial Malleolar articulations and Talofibula ligaments) against impacts produced during the practice specific of sports such as Soccer, Football, Baseball, Hockey, Skateboard and Skating.

TECHNICAL DRAWING DESCRIPTIONS

Page 1

A. Protection Shell for the ankle (Material Cut)
B. Flexible Membrane, Movement Parameters.
C. Elastic Band or Velcro holds the System in Position
D. PP Pivot Point

Version.1A. 1. Plastic shell, 2. Textile fabric or leader

Version.2A. 1. Plastic shell, 2. Textile fabric or leader, 3. Eva + cushion foam,

Page 2

A. Rear View. Protection Plastic Shelf for the ankle in both sides.
B. Rear View. Detail of the flexible membrane.
C. Front View. Velcro ensures a stable holding around the ankle.

Fig 1. Rear View. Second version of the system without the central membrane.
The system keeps movement parameters with two pivots points PP.

Page 3

A. Protection Shelf for the ankle (plastic)
B. The strap wraps around the ankle to ensure stability.
C. System Material Base form that put together all elements (Nylon, Polyester, Leader, Textiles fabrics)
D. Flexible membrane is the join element between Protection system and the shoe. (Foam, flexi plastic formula, leader, silicon or rubber)
E. Free movement area between system and Shoe. Version 2

Fig 2. Independent footwear system with combination of elements (A,B,C).

Page 4

A. Protection Shelf for the ankle (plastic)
B. The strap wraps around the ankle to ensure stability.
C. System Material Base form that put together all elements (Nylon, Polyester, Leader, Textiles fabrics)
D. The Flexible Membrane is the join Element of the system (works together with the "w" form construction).
F. The "W Form" construction integrates the complete system to the shoe form without losing lateral flexibility in the ankle area. Version 1

Page 5

A. Perspective View 3/4 front. Functionality
B. Perspective View 3/4 rear. Functionality

Page 6

A. Top View. The Convex form of system shelf guards the ankle from different attack angles.
B. The Velcro Strap Guarantee a stable holding to the ankle and free of movement.
C. The Impact Protection System guard the ankle from impacts or objects coming from different directions.

Page 7

A. Protection Shelf for the ankle (plastic or hard material)
B. The Elastic Band or Velcro Strap Guarantee a stable holding to the ankle in position.
C. System Material Base form that put together all elements (Nylon, Polyester, Leader, Textiles fabrics)
D. Cushioned flexible Membrane for comfort im Aquilles tendon area.
G. The new construction of the tong connects, and stabilizes the ankle protection system and the shoe. Fig 3. (Velcro or other matériel)
H. Free movement area between system and shoe. Version 3.
Title of the Invention

Ankle Protection System for Soccer shoes, Football shoes, Baseball Shoes, Speed skates skateboard, Ice skates and Hockey shoes.

Claims

Claim 1. An ankle protection system specific construction, with the capability of giving protection to the ankle area from impacts in the practice of contact sports and others, which is conform by two exterior plastic shells place over both sides of the foot ankle respectively. Where each shell has a variety of cushion layers, which are stitched to a material base form (leader or textile fabric). A nylon (or other) strap that connects both sides of the construction, stitched to material base form and meet in a central front of the foot specifically above the (Flexor Digitorum Longus tendon) which adjust, tight up or liberates the construction. A flexible membrane that is attached at the lower area of the material base form, placed an appropriate position over the Aquilleys tendon area of the construction, which represent the join element between construction and the shoe, as shown in drawings page 3, 4 and 5 describe in (Descriptions) pag 4. Technical Drawings Description. pag 3, 4 and 5.

Claim 2. A innovative elastic membrane with a specific horizontal ribs construction positioned over the Aquilleys tendon area of the rear shoe which is the join element between Protection system and the shoe and enables a full flexibility movement. As shown in drawings B page 1 and B page 2 and described in. (Descriptions) pag 3. Technical Drawings Description. pag 1 and 2.

Claim 3. A construction possibilities that can be used to form the system is made of six 6 basic elements: A, B, C, D, E, F. The system can be either build with all elements together or without some of them in the following combinations: (A, B, C, D, E) (A, B, C, D, F) (A, B, C, D) (A, B, C) (A, C, D, E) (A, C, D, F) (A, B, C, E) (A, B, C, F) (A, B, E) (A, C, F) (A, C). As shown in drawings page 3 and 4 and here described.
Claim 4. According to Claim 1 basic Element A. construction form characteristics:
A. A Protection Plastic shell constructed with a variety of materials (ABC, Kevlar, Polyethylene, Polypropylene, resins, or others) with specific layers of cushion textile materials under its convex form are attached to a base material by stitching or glue. The system is built with following versions materials or combinations of them. 
Version 1A, and Version 2A, as shown in Technical Drawings Description. pag 1 and described in (Descriptions) page 3.

Claim 5. According to Claim 1 basic Element B. construction form characteristics:
B. A (Nylon or other) strap specific construction form, which is integrated to the system material base form, and is able to adjust, tight up or liberates the construction. The strap is made of a sandwich construction of (Velcro stitched to : nylon, elastic band, polyester band, or leder band, cushioned foams and textile fabrics) in the specific order here described. The strap wraps around the lower part of the Tibia and Fibula bones, giving grip and stability to the system as shown in drawings page 1, 2 and 5.

Claim 6. According to Claim 1 basic Element C. construction form characteristics:
C. System Material Base construction form (Nylon, Polyester, or Leader) that hold together all elements of the system as shown in drawings page 4 and 5, and described in (Descriptions) pag 4. Technical Drawings Description. pag 3.

Claim 7. According to Claim 1 basic Element D. construction form characteristics:
D. The Flexible membrane construction form with ribs sub-divisions made with a combination of layers of (flexi plastic formula or rubber silicones, cushioned foams, and textile fibers) in the specific order here described from outside to the inside.

Claim 8. According to Claim 1 basic Element E. construction form characteristics:
E. Free movement area between system and shoe. Version 2, as shown in drawings page 3 and described in (Descriptions) pag 4. Technical Drawings Description. pag 3.

Claim 9. According to Claim 1 basic Element F. construction form characteristics:
F. - The "W stitched Form" - Version 1, construction that integrates the complete system to the Shoe without losing the lateral flexibility in the ankle area as shown in drawings page 4 and described in (Descriptions) pag 4. Technical Drawings Description. pag 4.

Claim 10. A System designed to integrate with footwear (Sport shoes) as shown in drawing pages (2,3,4,5) that can either be produce as a separate Independent footwear system with combination of elements (A,B,C) as shown in drawings page 3 Fig 2 and described in (Descriptions) pag 4. Technical Drawings Description. pag 3.
Claim 11. A second version of the flexible membrane, that eliminates the central membrane leaving a open central hole with the same border form, so the design will still keep the movement parameters as shown in drawings B and PP page 1, using the two side remaining pivot points, as shown in Fig1. Page 2 and described in (Descriptions) page 3. Technical Drawings Description. Page 1 and 2.

Claim 12. Further comprising Claim 1, A nylon (or other) strap construction form that connects both sides of the ankle system, stiched to material base form and meet in a central back of the foot specifically over the (Aquilles tendon) area which adjust, tight up or liberates the construction. This construction extent parallel from the back to the front of the shoe covering both ankles and integrates with the shoe tong, (Version 3) using the basic elements of the system as shown in the Technical drawings Descriptions page 7, and adding a stabilizing element G that holds the system in position. Fig 3. This element gives enough space to H for free movement area between system and shoe (Descriptions) Pag.4
Application No: GB0618480.8
Claims searched: -
Examiner: Sally Vaughan
Date of search: 4 April 2007

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Documents considered to be relevant:

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