NECK PROTECTION COLLAR

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Appl. No.: 12/700,586
Filed: Feb. 4, 2010

Publication Classification

Int. Cl.
A41D 13/00 (2006.01)

U.S. Cl. 2/468

ABSTRACT

A neck protection collar for protecting the neck of a user has a collar portion that substantially wraps around the neck of a user. A neck protection portion extends up a rearward portion of the collar to protect the neck and part of the cranium. In one embodiment, a chamber is disposed along a portion of the neck protection collar and is filled with an energy absorbing fluid that distributes the force applied during an impact so that injuries are reduced. In another embodiment, a plurality of chambers are filled with the energy absorbing fluid and are used to provide the energy absorbing function. The fluid is an energy absorbing gel or liquid. In one embodiment, the chambers are filled with a gas such as air. A fastener is disposed along an upper portion of the neck protection portion to attach to a helmet.
NECK PROTECTION COLLAR
CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority and herein incorporates by reference U.S. provisional patent application 61/149, 731, filed Feb. 4, 2009.

BACKGROUND OF THE INVENTION

Neck injuries are unfortunately common with most of them being associated with vehicle crashes. Sports injuries, while not as common, are never the less very serious and often have long term or permanent effects on an individual. Additionally, adolescents often play sports which leads to neck injuries even when wearing conventionally protective equipment such as helmets and shoulder pads. While the neck is surprisingly resilient, it is a weak point when subjected to extreme forces.

There is a need for a neck protection collar that may be attached to a helmet to provide additional protection for the user’s neck without significantly restricting movement.

SUMMARY OF THE INVENTION

A neck protection collar for protecting the neck of a user has a collar portion that substantially wraps around the neck of a user. A neck protection portion extends up a rearward portion of the collar to protect the neck and part of the cranium. In one embodiment, a chamber is disposed along a portion of the neck protection collar and is filled with an energy absorbing fluid that distributes the force applied during an impact so that injuries are reduced. In another embodiment, a plurality of chambers are filled with the energy absorbing fluid are used to provide the energy absorbing function. The fluid is an energy absorbing gel or liquid. In one embodiment, the chambers are filled with a gas such as air. A fastener is disposed along an upper portion of the neck protection portion to attach to a helmet.

Other features and advantages of the instant invention will become apparent from the following description of the invention which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front view of a neck protection collar according to an embodiment of the invention.

Fig. 2 is a front view perspective drawing of the neck protection collar shown in Fig. 1.

Fig. 3 is a back view perspective drawing of the neck protection collar shown in Fig. 1.

Fig. 4 is a front view of the neck protection collar attached to a helmet using a hook and loop fastener.

Fig. 5 is a front view of the neck protection collar attached to a helmet using mechanical fasteners.

Fig. 6 is a side view of the neck protection collar attached to a football helmet.

Fig. 7 is a front view of a neck protection collar according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

In the following detailed description of the invention, reference is made to the drawings in which reference numerals refer to like elements, and which are intended to show by way of illustration specific embodiments in which the invention may be practiced. It is understood that other embodiments may be utilized and that structural changes may be made without departing from the scope and spirit of the invention.

Referring to Figs. 1-3, a neck protection collar 100 is shown having a neck support portion 110 extending upward from a rearward portion of a collar portion 130. A hook and loop fastener pad 140 is attached to an outer edge of neck support portion 110.

A fluid chamber 120 is attached to an interior portion of neck protection collar 100 and is filled with an energy absorbing fluid. Non-Newtonian shear thickening fluids known as dilatants provide good energy absorption properties and are used to provide the impact absorbing functionality. Of course other fluids may be used such as oil, emulsions, water or even a gas such as air may be used to provide the protective functionality. Additionally, a resilient material such as foam or rubber may be used to provide the impact resistance.

Neck protection collar 100 is made of a flexible cloth covered foam that incorporates fluid chamber 120 therein. Fluid chamber 120 is filled with the energy absorbent fluid and sealed to prevent leakage. Alternatively, a filling port (not shown) may be provided to allow post production filling of a suitable fluid. Additionally, other materials may be used to make neck protection collar 100 such as plastic, composite materials, fabric or any other suitable material.

Now referring to Fig. 4, neck protection collar 100 is shown attached to a helmet 160 using a hook and loop fastener pads 140 and 150 respectively. Hook and loop fastener pad 150 is applied to helmet 160 and attaches to the corresponding hook and fastener pad 140 that is attached to neck protection collar 100 and can be used with a variety of helmets. To use neck protection collar 100 with different helmets, the user simply applies a hook and loop fastener pad to the desired helmet.

Referring now to Fig. 5, neck protection collar is permanently attached to helmet 160 with a plurality of rivets 270. In this embodiment, neck protection collar 100 is not interchangeable and is part of the helmet. In a similar manner as discussed above, neck protection collar has collar portion 230, neck support portion 210 and fluid chamber 220. Of course other mechanical fasteners may be used such as snaps, bolts or other suitable fasteners as is known in the art. Additionally, a removable or permanent adhesive may be used to secure neck protection collar 100 to helmet.

Fig. 6 shows a side view of a football helmet 280 worn by a user 290 with neck protection collar 100 attached therein. Neck support portion 110 is shown attached to helmet 280 with hook and loop fastener pad 140 and 150 respectively. Collar portion 130 wraps around the user’s neck to provide support during an impact.

Referring to Fig. 7, a plurality of fluid chambers 320 are shown attached to a neck protection collar 300 along an inner portion of a collar portion 330 and neck support portion 310. A hook and loop fastener pad 340 is used to connect to a helmet as discussed above.

Although the instant invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art.

What is claimed is:

1. A neck protection collar for protecting the neck of a user comprising:
a collar portion adapted to substantially wrap around a neck of a user;
a neck support portion disposed along a rearward perimeter portion of said collar portion and projecting upward adapted to protect said user’s neck and anterior cranium portion;
a connecting means disposed on said neck support portion for attaching said neck protection collar to a helmet;
least one chamber disposed along a portion of said neck protection collar; and
an energy absorbing fluid disposed within said at least one chamber wherein impact energy is distributed throughout said energy absorbing material to minimize potential injuries.
2. The neck protection collar for protecting the neck of a user according to claim 1 wherein said energy absorbing material is an energy absorbing gel.
3. The neck protection collar for protecting the neck of a user according to claim 1 wherein said energy absorbing material is an energy absorbing liquid.
4. The neck protection collar for protecting the neck of a user according to claim 1 wherein said energy absorbing material is a gas.
5. The neck protection collar for protecting the neck of a user according to claim 1 wherein said energy absorbing material is a resilient foam.
6. The neck protection collar for protecting the neck of a user according to claim 1 wherein said connection means is a removable adhesive.
7. The neck protection collar for protecting the neck of a user according to claim 1 wherein said connection means is a hook and loop fastener.
8. The neck protection collar for protecting the neck of a user according to claim 1 wherein said connection means is a mechanical fastener.
9. The neck protection collar for protecting the neck of a user according to claim 1 wherein said neck protection collar is substantially made of flexible fabric.
10. The neck protection collar for protecting the neck of a user according to claim 1 wherein said neck protection collar is substantially made of flexible plastic.
11. The neck protection collar for protecting the neck of a user according to claim 1 wherein said neck protection collar is substantially made of flexible foam.
12. The neck protection collar for protecting the neck of a user according to claim 1 wherein said at least one chamber is disposed along an interior portion of said neck protection collar.
13. The neck protection collar for protecting the neck of a user according to claim 1 wherein said at least one chamber is disposed along an exterior portion of said neck protection collar.
14. A neck protection collar for protecting the neck of a user comprising:
a collar portion adapted to substantially wrap around a neck of a user;
a neck support portion disposed along a rearward perimeter portion of said collar portion and projecting upward adapted to protect said user’s neck and anterior cranium portion;
a connecting means disposed on said neck support portion for attaching said neck protection collar to a helmet;
a plurality of chambers disposed along a portion of said neck protection collar; and
an energy absorbing fluid disposed within said plurality of chambers wherein impact energy is distributed throughout said energy absorbing fluid to minimize potential injuries.
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